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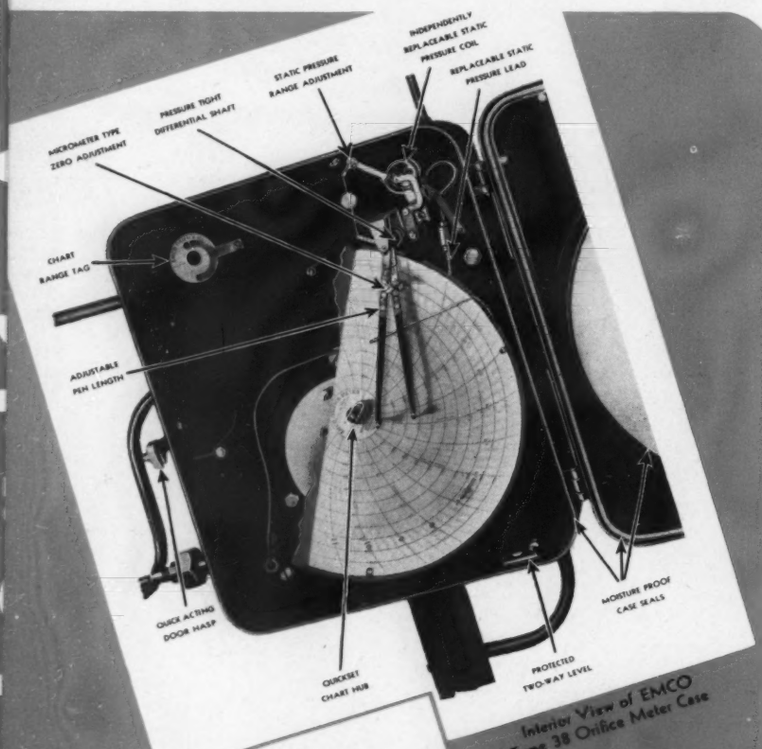
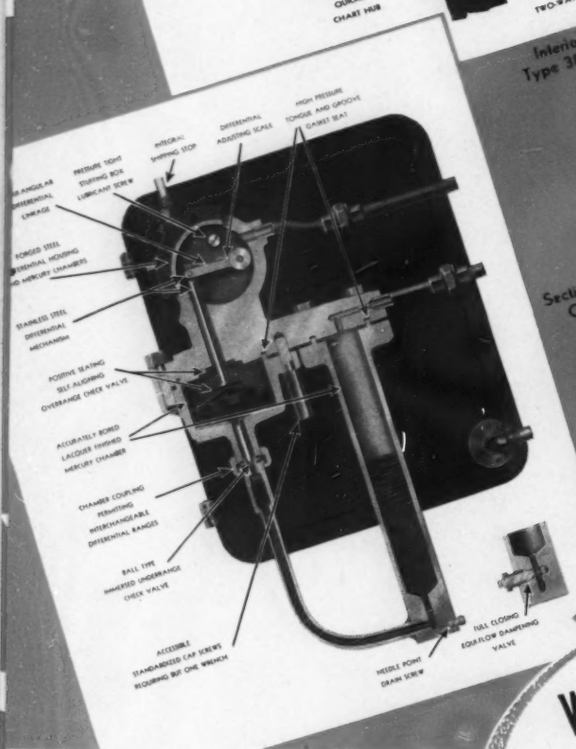


Interior View of EMCO Type 38 Orifice Meter Case



Sectional View of 100" EMCO Orifice Meter Manometer

The EMCO Type 38 Orifice Meter has as its background of development the entire history of the orifice meter in the oil and gas industries. Our 52 years of measurement experience in serving these industries plus suggestions received from Field Engineers and men using orifice meters have resulted in the EMCO Type 38 Meter, an instrument unexcelled in accuracy and ruggedness of construction and one accessible in the highest degree for routine servicing and maintenance.

It is an accepted fact that an indicating and recording mechanism of this type must receive attention at regular intervals; that adjusting, repairing and inspection must be done quickly and efficiently, that any design which will facilitate these three functions will result in a large saving of time and expense encountered in maintenance. All of these points have been developed to a high degree so that with extreme accuracy an accomplished fact, the ease of maintenance and service will demonstrate in a very short time the advantage of the EMCO design. Continual field experience has given EMCO engineers an insight to these important points and while the actual recording of the static and differential pressures has been the main consideration, the EMCO Type 38 Orifice Meter is a measuring instrument highly developed in details adding to accuracy and serviceability.

The inside story of EMCO meter construction is told in the accompanying sectional views of case and manometer. The whole story of this meter is now being told in the field where they are proving their worth accurately and continuously measuring gas, steam, oil and other fluids.

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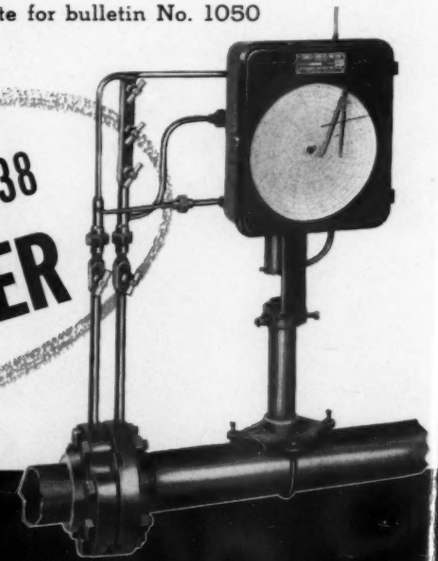

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GAS

Fifteenth Year of Publication

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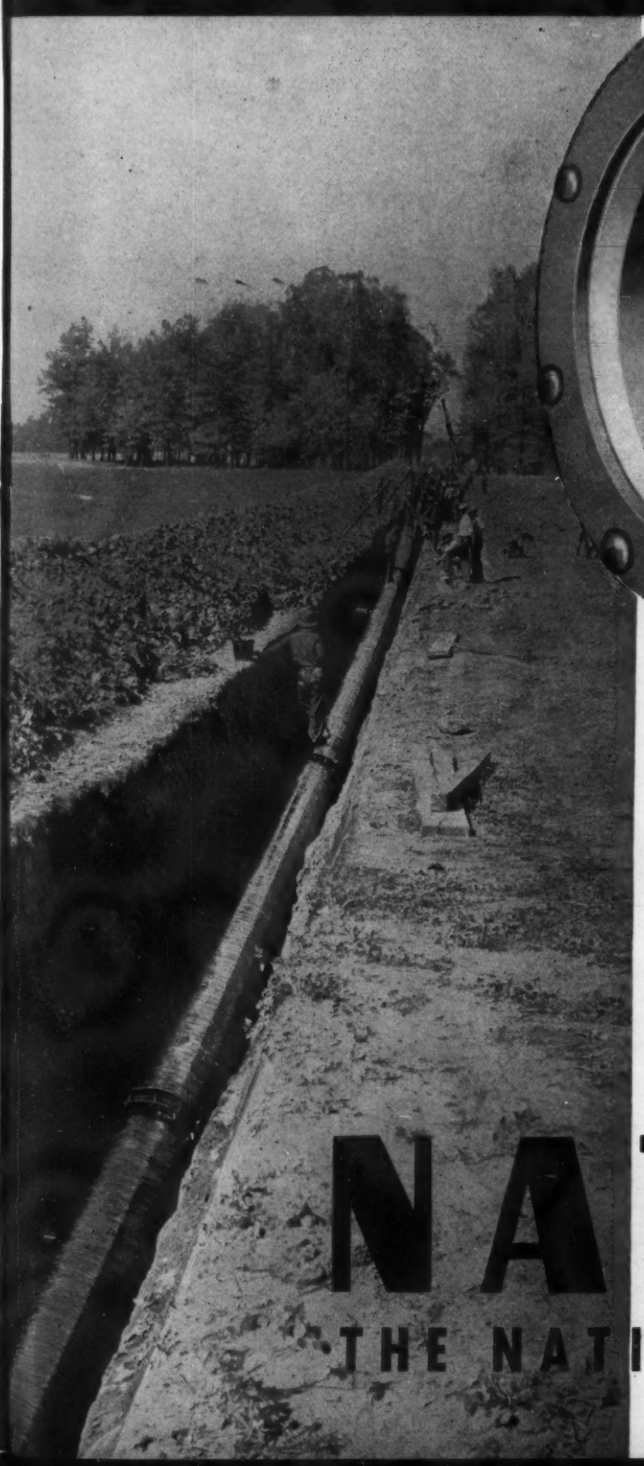

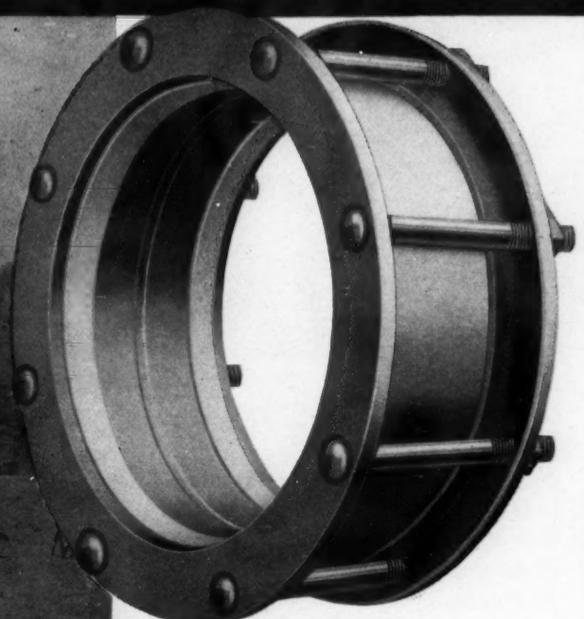

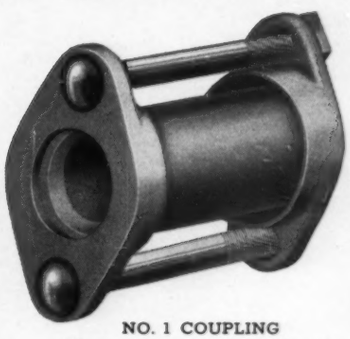

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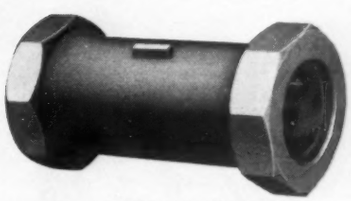

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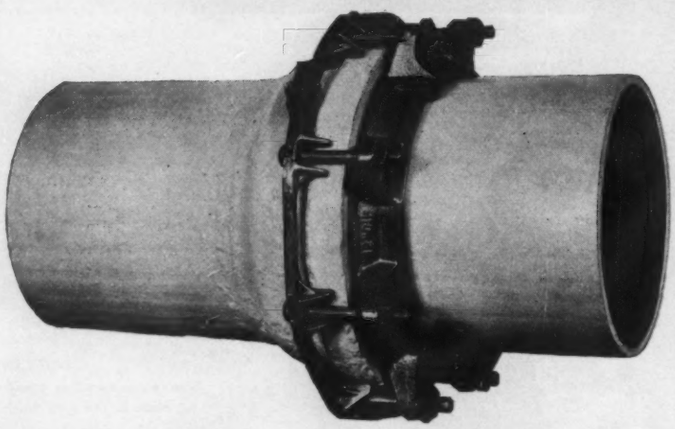

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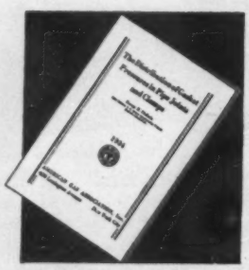

FREE! Send for booklet: "The Distribution of Gasket Pressures in Pipe Joints and Clamps."

The simple logic of incorporating an *extra* margin of safety into the construction of a bridge, building, dam, or engineering structure of any kind needs little explanation. It is self-evident.

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6. Hundreds of Users—including 83% of the largest cities in America.
7. Built by Dresser—largest and oldest maker of bell-joint clamps.

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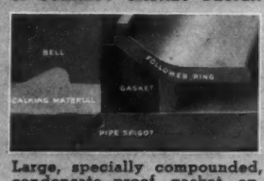

Large, specially compounded, condensate-proof gasket extends well up face of bell beyond calking and is confined so as to provide a pressure-tight seal, plus desirable flexibility in the joint. No protective parts are necessary.

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Thousands of miles of Republic Electric Weld Line Pipe installed here and abroad testify to the ability of this universally-accepted line pipe to meet every test of construction and service.

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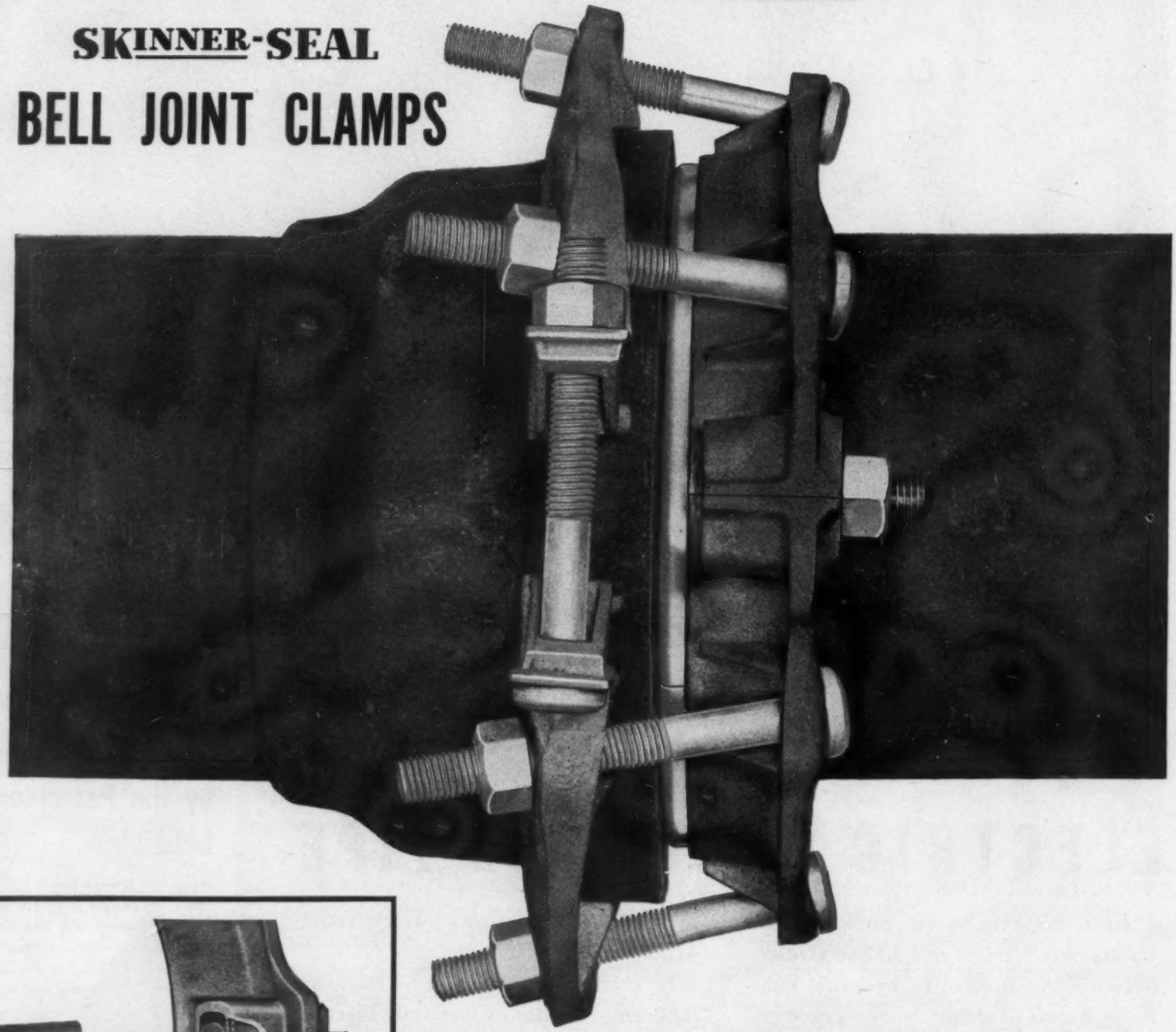
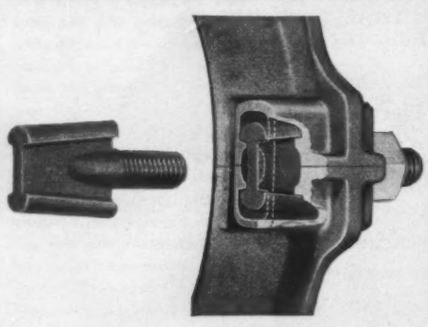
MONEL METAL BAND SEALS GASKET!

SKINNER-SEAL BELL JOINT CLAMPS





The new, patented Skinner Wedge Lock for holding the halves of the main ring together. It makes the most rigid ring ever used in a bell joint clamp.

The soft rubber gasket in a SKINNER BELL JOINT CLAMP is completely SEALED by monel metal band at bell face and hard vulcanized gasket tip at spigot. Pressure is sealed in; air, moisture and gasket-destroying soil conditions are sealed out! Complete adjustability for variations in pipe diameter reduces number of clamps you have to carry on hand. Speedy, one-man application cuts job costs. Send for new catalog just off the press.

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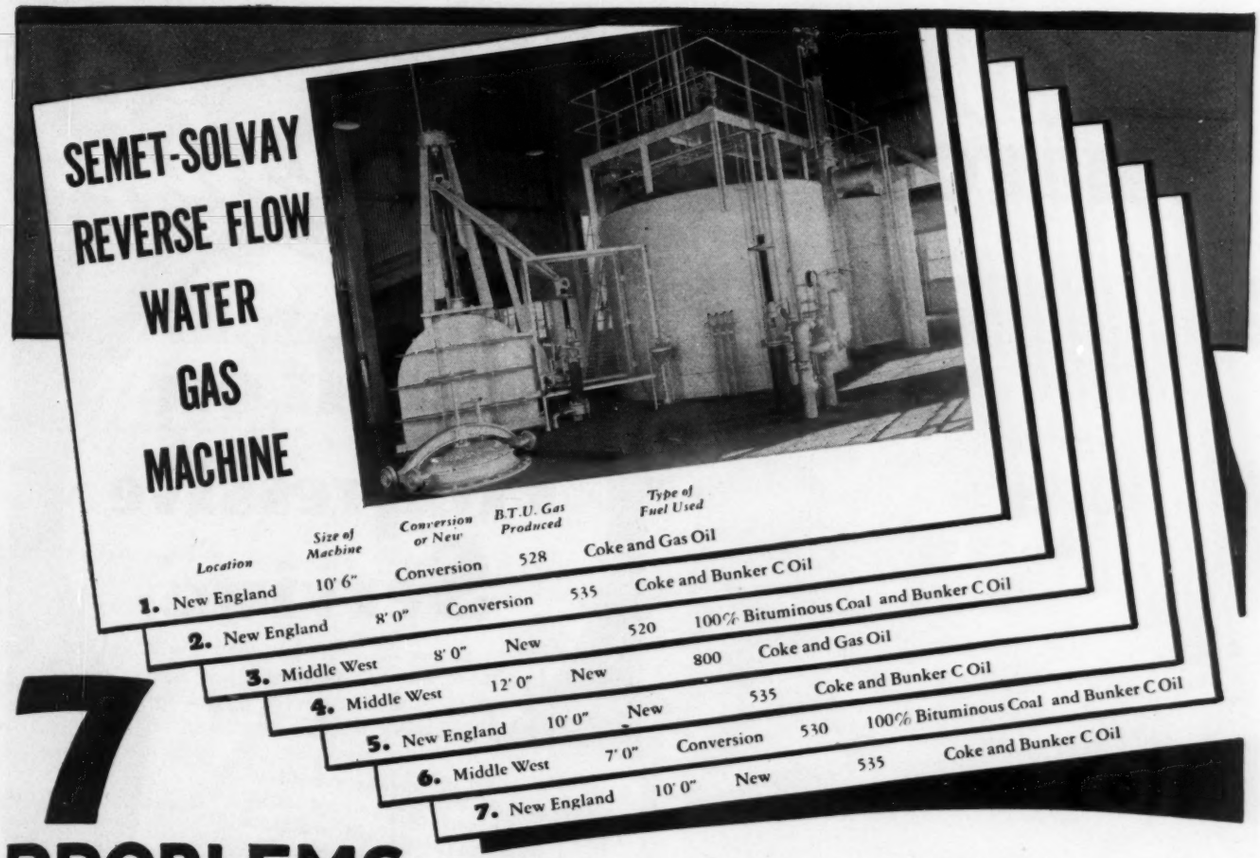
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Size of Machine
Conversion or New
B.T.U. Gas Produced
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Cribben and Sexton Company was the first gas range manufacturer to properly interpret the vital need of controlled, simmering burners, from the standpoint of use value to the consumer. The basic story of modern top burner cooking performance was to a great extent developed and promoted by Universal.

First in Introducing the Complete Merits of Modern Oven Performance

Outstanding oven performance has long been one of the corner stones of the Universal program. The new improved oven performance resulting from engineering development and scientific research was molded into a powerful sales story that has done much to awaken consumer interest in modern gas ranges.

A Pioneer in CP Range Development

Universal was one of the first manufacturers to submit and have passed a range that qualified for the CP seal of Certified Performance. Adherence to a sales program based on superior cooking performance, plus intelligent engineering research made it possible for Universal to be a pioneer in CP development.

First in Establishing a New Trend In Gas Range Salesmanship

Cribben and Sexton Company was the first manufacturer to drastically revise its sales program, basing its promotion plans on cooking performance and the interest of the woman rather than on construction and price. Universal method of salesmanship, wherever it has been applied, has stepped up personal retail selling to a new plane of efficiency.

Universal Gas Ranges

CRIBBEN & SEXTON COMPANY, 700 N. Sacramento Boulevard, Chicago, Illinois

GAS
JUNE, 1939

GUEST Editorial

A Maiden Shall Battle a Giant

By E. L. HALL

Vice-President and Chief Engineer, Portland Gas & Coke Company, Portland, Oregon

"THE galloping white horses of the Columbia have been tamed and harnessed for the benefit of mankind. The mighty development at Bonneville will soon deliver to the homes and factories of the Portland area the blessings of cheaper power which will supersede and antiquate the older methods of cooking, water heating and househeating, as well as make possible a tremendous industrial development."

Thus speaketh the Prophet of Political Power.

To the gas industry in the Northwest and particularly in the Portland area, the power giant might seem to be on the point of devouring the puny and helpless gas maiden.

Now cometh one Jay Jenkins and sayeth to this writer—with thy 12-foot slide rule thou shall defend this fair lady. It becomes the writer's sad duty, however, after making sundry scientific measurements, to state that the giant has no hair on his chest, while the lady is a real Amazon.

There is an epic struggle going on here in the Northwest between gas and electricity representing more than competition between rival services. It is, first of all, a battle between subsidized and privately managed industry. It is, furthermore, a fight between the politicians on the one side, and the engineer on the other; between mechanical energy on the one hand, and chemical energy on the other, and the contestants are very much more evenly matched than is popularly believed to be the case.

Here are some of the high-lights:

The Bonneville development has a present capacity of 86,400 kilowatts, and an ultimate development of 518,400 kilowatts. However, if the plant of Portland Gas & Coke Co. in Portland, Ore., is selected for comparison and its capacity for delivering heat units be expressed in terms of kilowatts, we find this plant to have a present capacity of approximately 420,000 kilowatts. In other words, the capacity of the existing gas plant at Portland is almost five times the present capacity, and almost as large as the ultimate capacity of the Bonneville development.

The announced rate for electrical energy at the Bonneville switchboard is $14.50 per kilowatt-year, and delivered to the consuming area $17.50 per kilowatt-year.

If, now, the output of the gas plant above referred to is expressed in terms of kilowatt-years, after charging in all operating expenses and fixed charges, it will be found that this plant can deliver a kilowatt-year for $7.91, or less than one-half of the announced wholesale rates of the Bonneville Authority. This substantially lower cost for gas energy is made possible by the by-product developments associated with the manufacture of gas. In fully utilizing all of the opportunities for processing raw materials to the greatest economic value, lies the key in successfully maintaining the relative thermal advantage of the gas plant over the generation of electricity from water power.

In this age of separating and recombining atoms and molecules, including such operations as cracking, polymerization, cyclization, alkylation, isomerization, hydrogenation, etc., there doesn't seem to be any limit in sight for the production of new and valuable products from gas making materials.

The Bonneville Authority has announced recently the so-called objective rates for the retail resale of Bonneville electrical energy. It should be understood, however, that these are not actual rates, but are merely rates which are at the present time considered as being ideal and indicative of a goal which the Authority hopes to reach in the future.

It is interesting to note that the gas rates now available in the Portland area are already substantially lower than the proposed objective rates.

The gas industry in the Northwest looks forward, therefore, with cheerfulness to the good fight with a realization, however, that it is not generating costs, but public acceptance that will win the battle.

ON PARADE . . .

● The gas industry's achievements are on display at New York and Golden Gate, for all the world to see. Exhibits that range from laboratory to kitchen . . . from scientific background and the field-work of gas production, to the newest gas-burning appliances.

The officially designated use of gas in the World Fair buildings themselves, tells a significant story of fuel versatility. . . . An augury of a vast industry ready for a new era of expansion.

Of immediate importance is the sales influence of this stupendous publicity, affording unequaled opportunity for an extensive increase in gas utilization.

And accurate gas measurement is an essential of gas industry growth and progress. For over a century, American Meter Company research and engineering have set the requisite technical standards.

AMERICAN Tinned Steelcase Meters and **METRIC-AMERICAN** Ironcase Meters, for example, feature important modern meter developments you should know about. They are discussed in Catalogs **TG-4** (new edition) and **EG-40** . . . available upon request.

FACTS EVERY GAS MAN SHOULD KNOW . . .

- $5,000,000,000 approximate total investment represented by U.S.A. gas companies! ($4,200,000,000 is the investment figure for Steel.)
- Gas Industry capital investment of $37,000 for every employee. ($25,000 for Railroads; $7,000 for Steel; $3,000 for the Automotive Industries.)
- Total annual payroll of over $213,000,000 for the Gas Industry's 135,000 employees—$1,575 per employee. (Exceeds very substantially the average annual wage in the Automotive and Steel industries.)
- Gas Industry's 48-hour week in 1929 reduced to 40 hours by 1936—yet the 1936 average annual wage per employee was slightly higher.
- 40¢ paid Government by the Gas Industry in taxes, for every dollar paid in wages.

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AMERICAN METER COMPANY

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THERMALLY *Thinking*

Convention Afterthoughts

Owing to last-minute circumstances that arose, it was impossible for me to be at Tulsa, but our editorial staff men, whose preliminary reports are coming through now as I write, are lavish in their enthusiasm about the merits of the Natural Gas Section annual convention. Their "Tulsa Convention Highlights" report appears elsewhere in this issue.

Instead, I have consoled myself by doing the next best thing, and that is reading the convention papers as they have been issued by the A.G.A. If it means anything to the authors, I would like to add my humble applause to that of the delegates who were there to hear them. But, it is only when you have missed an outstanding program like this one that you really appreciate the full value of such a convention. You miss your industry friends, new and old; the informal discussions of mutual problems; the convivial handclasps and the "off duty" fun. Furthermore, an industry being solely a group of individuals organized to work constructively for a common purpose, you miss the annual opportunity to meet the industry face to face and catch its actual tempo, which might be sensed, but certainly cannot be felt any other way.

So, let's put it this way: While the convention didn't miss me, I have missed it, and the loss is a deep personal one.

Coal Stokers

No gas man can afford to ignore the coal stoker, especially now that some of the electric utilities are sponsoring its sales. There was a time, and only a few years ago too, when the stoker was groping its way hesitantly into the domestic field. In those days it was about as menacing as a Christmas card. At least I thought so, and went on record to that effect. To its disadvantages of raw fuel storage, ash removal, etc., I complacently gave it a five-years' life and added one-fifth of its installed price to its annual cost of operation. On that basis it couldn't begin to match average gas heating costs. People who wanted and could afford to pay for automatic heat, I felt, were not going to be satisfied with such a contraption. It was a mighty high premium to pay, I thought, to junk the coal shovel.

The facts would indicate that I was considerably wrong. According to *Electrical Merchandising* stoker manufacturers sold 90,860 units with a retail value of $27,612,640 in 1938, compared with 98,521 units for $31,305,926 in 1937, reflecting a "recession" decline less than ours.

Increased advertising and aggressive specialty merchandising with lower unit prices are held responsible for these sales results. Manufacturers concede that electric utility cooperation has also been an effective factor.

Stoker competition need not be tough as far as gas automatic heating is concerned, if we are prepared to make the additional sales effort, drag total costs out into the open, and then translate them into real values.

New Ideas

Some of our more alert promotional men are apt, at times, to be discouraged by the reluctance (apparently) with which the gas industry will grasp new ideas. Recently one of them said to me, "It takes five years for the gas industry to 'catch on'." I don't agree with him *in toto*, though I am sympathetic to his impatience. I realize the difficulty of putting young heads on old shoulders and vice-versa, but I equally appreciate the inertia of tradition in a fast-moving world like ours.

Perhaps the answer is that we do not pound away enough at vital ideas. When we do, we invariably get results. The CP range is succeeding because there are determined men in both the A.G.A. and A.G.A.E.M. who refuse to be discouraged by the conservatives.

Then again, maybe one of our failings is our inability to recognize the eternal truth of fundamentals. Instead of spending so much time to doll up a fundamental to present it in different ways, theoretically to make it more interesting, we should be content to hammer away with our plain unvarnished fundamental truth until it is figuratively engraved on the public's brainpan.

For example, several months ago Helen Smith of the Rochester Gas & Electric Corp. stated the whole case for superior gas cooking compared with electricity. She quoted Harvey Klumb of her company's testing laboratory, and what Mr. Klumb said should have been clipped by every gas range salesman in the country, pasted in his hat, and made an essential part of every gas range sales presentation, even though the kilowatt cookoo-ery boys are not within 50 miles. This is what Mr. Klumb said:

> "Perhaps you may have forgotten my oft-repeated contention that a good gas range will do a better baking job than a good electric range. I say this in spite of the fact that I have been trained electrically and in spite of the fact that we sell gas as well as electricity and believe in both.
>
> "The electric range designer has two good hurdles to jump. First, to get a thermostat which does not swing the oven temperature over more than a few degrees, and find a place to put it where it will reflect what is going on in the oven and react accordingly. Second, find some way to maintain at least reasonably uniform temperatures on both the vertical and horizontal oven planes. As you know, differences in electric ranges as high as 28 degrees to 50 degrees F. may be found on the horizontal plane, and these differences are constantly changing as the thermostat swings the oven temperature. Pity the poor housewife who tries to make two cakes look alike! Such things are not found in good gas ranges, which show variations of only two or three degrees, probably because the increased air movement tends to wash them out, and again probably because the gas range manufacturer has no red hot radiating body to contend with and has throttling control of the heat input rather than the 'on and off' operation in an electric range. Another reason why gas range cooking produces more uniform results is that it relies upon convected heat. The gas range, therefore, is not subject to the difficulties which beset users which depend upon radiant heat. The engineer knows that shadows are cast by utensils in the electric oven, which places major, if not complete dependence, upon radiant heat. He knows, too, that such shadows seriously impede uniform results; hence he will concede the superiority of convected heat in the field of oven cookery."

With such a fundamental truth under his hat, every gas range salesman should be a much better one — if?

Politically Poisoned

When you call a spade a spade, it is well to be sure that it is a spade. Accordingly, when the Federal Power Commission last March issued a report which was really a "blast," on rate reductions and comparative rates between publicly (i.e., politically) and privately owned electric utilities and their tax equivalents — very unfavorable to the private plants — I decided to do some investigating on my own account, although one should reasonably expect the truth and nothing but the truth from a theoretically impartial agency of the Federal Government.

The facts are that there is no real basis of comparison, until the accounting methods of public and private electric systems tell their story in the same language. For example, the private utilities average about 17 cents in taxes paid per dollar of gross revenue, whereas the taxes paid by the politically-operated municipal plants in 1936 were only 1.2 per cent, and in 14 states they didn't pay a nickel. To cover this up, the Federal Power Commission grouped the tax payments of politically-operated plants with "contributions" which, as C. W. Kellogg, president, the Edison Electric Institute, explained, are "made when, as, and if funds are available and do not bear any resemblance to taxes paid regularly and under compulsion to a multitude of tax-gathering bodies. They should properly be compared with dividends by private companies, and as dividend payers, municipal plants have a very poor record."

The report is so "raw" that it is hard to assume that it is anything else but deliberately designed to discredit an industry — one of the staunchest taxpayers in the United States — and whose greatest crime apparently is an attempt to earn a reasonable profit for services rendered.

And then some of the Washington "wizards" still wonder why business is inclined to gag at their palliatives.

Pipe Line Competition

When a coal and lumber dealer supports a proposed natural gas pipe line extension, it is on a par with the classic "Man bites dog" news story. It has been the practice of the coal people especially, to oppose vociferously any proposals to extend natural gas service to new territories. G. A. Gilbert, coal and lumber dealer, Watertown, S. D., is an exception, according to the *Bismarck Tribune*, March 28. But let us present a quotation:

> Gilbert was a witness at the hearing on the Kansas Pipe Line & Gas Co.'s application for permission to construct a pipe line from the Hugoton, Kan., natural gas fields across Nebraska, South Dakota, North Dakota and Minnesota to the Messaba iron range.
>
> Gilbert said many Watertown coal dealers believed the coming of natural gas would ruin their business, but that he had advised them he believed that in the long run their business would benefit from natural gas because of the resultant industrial growth of the community.
>
> Alluding to the fact various coal interests were opposing the construction of the pipe line, he said he told the dealers, "If the coal business has to rely on political and unfair dealing, we'd better get out of it."

In his last sentence, Mr. Gilbert puts the finger on the pettiness of much of the coal industry's opposition to the extension and development of the natural gas industry. In today's battle of the fuels, the public welfare is paramount. In other words, if you cannot meet your competition without fear or favor, then gitohell out of it.

The Mass Market... No. 4

The Possibilities of Gas Refrigeration As A Load Builder in the Lower-Income Group

By STANLEY JENKS

IN OUR previous studies of the "mass" market in manufactured gas territories, we have found that the inexorable paucity of their purses, made our lower-income customers more than a normal sales problem. To review briefly, 60 per cent of our manufactured gas customers use less than an average of 10 therms per month. (See *GAS*, February 1939, page 15.) Better than 90 per cent of them use less than 20 therms a month, and with manufactured gas service available at an average price of 16.3c a therm, and with the average family shown to be able to afford only $1.66 monthly for water-heating, it is like beating one's head against a stone wall, trying to sell such a customer an appliance which he cannot afford to use, no matter how badly he needs and wants it. In this connection, as half the loaf which is better than no bread, I suggested a single point automatic water heater with limited but apparently adequate capacity, if the thousands that have been sold in New England are any criterion. So far, therefore, and from the ability-to-pay-for-the-gas-used viewpoint, it has been a case of "needs must, when the devil drives."

A Story of Savings

But, with the gas refrigerator, it is different—very different—for here we have a load-building appliance that actually costs less to operate than the equipment it is designed to replace. There is a direct savings over the old-fashioned ice box method, and the indirect savings in food spoilage and additional storage capacity merely clinch the savings story.

The problem of selling gas refrigeration to the "masses" is not one of creating a need for the gas refrigerator, or justifying the value of additional utilization cost, so much as finding an economic way of making it available to our lower income customers.

The first point is the degree of acceptance attained by gas refrigeration. Table No. 1 shows the comparative number of gas and electric refrigerators in use by years since 1930 in these United States. The figures are supplied by the A.G.A.

There are many interesting slants that could be developed from the figures in Table No. 1. We'll content ourselves with using them to pursue our original intent of studying the "mass" market. In the gas industry, we have a total of domestic customers as follows:

Manufactured gas	9,205,100
Natural gas	6,513,400
Liquefied petroleum gas	500,000
Total	16,218,500

Assuming that 5,000,000 of these customers are "cliff dwellers" or apartment residents with little or no control over their refrigeration choice, and not immediate prospects as individuals for refrigerators, there is an unsold market of 16,218,500 - (13,400,000 - 5,000,000=7,618,500 or almost 50 per cent of our total domestic meters.

You may contend that these are just general figures and therefore not necessarily true of some particular localities. I agree. In New York's Manhattan, the largest concentration of population in these United States, I am told there are about 8000 single and double residences on Manhattan Island despite its 3,000,000 inhabitants. In Chicago, less than 25 per cent of the Peoples Gas Light and Coke Co.'s domestic meters are in single or double family residences. So, as shown in the two just-quoted examples, it is not hard to find places where exceptions to the above generalities can be found.

On the other hand, may I refer you to an actual refrigeration survey made last year in Crown Point, Ind. (*GAS*, September 1938, page 20). Crown Point is a typical midwest county seat with a 4000 population. The survey, instigated by E. A. Longgood, division manager, Northern Indiana Public Service Co., Hammond, Ind., showed that in 740 homes, only 372 (50.5 per cent) had any form of mechanical refrigeration at all; 158 used old-fashioned ice boxes, and 200 had no means of refrigeration whatsoever. It is because I happen to have first-hand knowledge of the Crown Point situation, and have every reason to believe that the above are such typical figures as could reasonably be anticipated from other average communities, that I feel these Crown Point figures are significant. Incidentally, they confirm or at least explain the above general deductions as not being so far out of line after all, as they appear at first glance. And who is going to argue that these 358 customers in Crown Point without mechanical refrigeration represent the so-called "better" classes, or as W. E. McCreery called them, "the chairman of the board, the financier, and the customers of the higher income class"? The best we can say about them from a market potential viewpoint is that 158 of them can afford to buy ice, and therefore, can all the more afford to operate an automatic refrigerator if — yes! — if they can afford to buy one.

A Problem To Solve

In the hundred or so years of its existence, the gas industry has learned to solve its problems, and there should be little eventual difficulty in solving the problem of the "mass" market customer who can afford to use a gas refrigerator, but hasn't the wherewithal nor credit to buy one. Today, our sales program is pretty well set, and we are mainly occupied in either selling replacements for worn-out compressor jobs, or competing for sales with the field in the medium income brackets. In other words, we are still playing the same old refrigerator sales tune, with our own local variations, to charm the ears of the buyer able to buy a new gas model. Trade-in-allowances, easy term payments are the theme and cadenza of our tune, but—there are still better than 50 per cent of our customers who have not signed on the

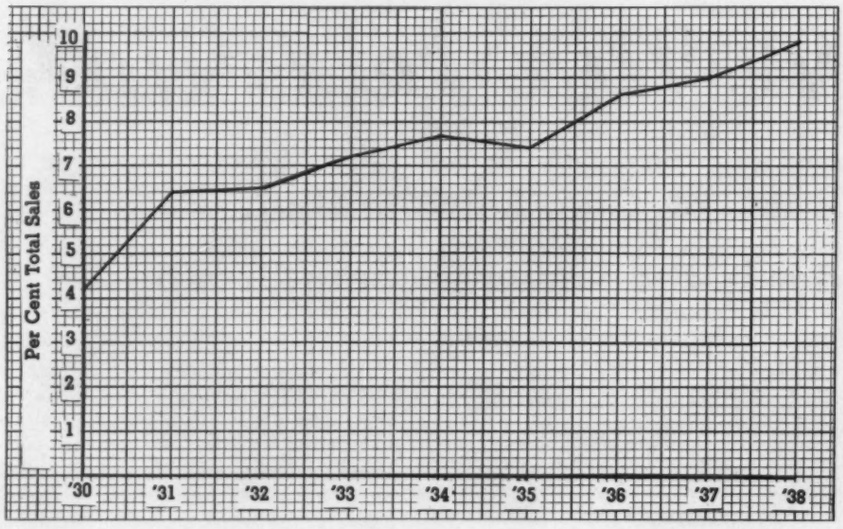


FIG. 1. Chart showing percentage of gas refrigerators to total automatic refrigerators sold.

TABLE NO. 1 — REFRIGERATORS IN USE AT THE END OF THE YEAR: THOUSANDS OF UNITS

	1930	1931	1932	1933	1934	1935	1936	1937	1938
Gas	115	200	300	380	500	660	860	1125	1310
Electric	2625	3499	4300	4900	6020	7000	9200	11,400	12,101
Total	2740	3699	4600	5280	6520	7660	10,060	12,525	13,411

dotted line so far, and furthermore, most of them never will, under present conditions, despite the 2,500,000 automatic refrigerators the experts tell us will be sold this year. (We must not forget that there will be 1,200,000 new families set up this year, too.)

The gas refrigerator load, averaging 10 therms monthly according to the 1938 A.G.A. Rate Committee report, is a most attractive load, especially when added to the 10 therms of 60 per cent and the 20 therms of 90 per cent of our "mass" customers. If we could get this load—if—only, if we could sell these low income customers gas refrigeration—one of the most aggravating problems in the manufactured gas industry would be satisfactorily solved.

A Plan Proposed

R. J. Rutherford. vice-president, the Worcester Gas Light Co., and current national chairman of the A.G.A. Refrigeration Committee, has the enviable reputation of being one of the brightest minds among the up and coming younger gas executives. He has outlined a plan that is a decided step forward toward selling the "mass" market gas refrigeration eventually. As far as I know, his plan is the first attempt to tie-in the trade-in major problem of the replacement market with the first cost obstacle of the "ice user" (I suspect he means all customers without automatic refrigeration) and use the former to crack the latter.

"The automobile industry," says Mr. Rutherford, "has gone through exactly this same cycle. What have they done about it? In the early days of the automobile, they had a market analogous to the ice user. As their sales progressed and the saturation went up, the replacement market became the prime market. This naturally presented the used car problem. Rather than treating this as a handicap, this situation was turned about into an asset. It was accepted as a necessary part of doing business. As time went on, they even advocated trading in your car every year. The next step was to sell this practically new trade-in to some one with a worse or older car until, after a series of about five trades, they ended up with a jolopy. Even this would be sold to Joe College and he would taste the pride of ownership, even though small.

"Study will show there are some very sound economics in this method. First, Joe College becomes educated to the conveniences and prestige of this form of transportation. After a year or two, he's a prospect for a little better car and so on till a new car owner has been born, weaned and reached maturity. And, note that the Buick agency may sell second-hand Fords or Chryslers or any make to get over the broad point of automobile ownership.

"Second and just as important, Joe has been building up an equity in automotive equipment from this first purchase on. He paid only $50 for the jolopy. When he goes to trade it in, it's worth as much as $40 on a better car. Joe thinks he's smart. He's just fixing actually to manufacture in the future other jolopies for other self-educated Joes, but so goes the cycle. Building desire and building equity.

Automatic Education

"Just supposing that, in gas refrigeration, we give this plan some thought.

"We get in trade an obsolete automatic refrigerator, and this may not necessarily be an electric, but might be a water-cooled Electrolux. Then instead of junking it, we fix it up to run. Say then it could be sold for $30 to $40 to a present ice user who actually cannot afford more, or to a newly-wed married couple. Wouldn't we be educating them to automatic refrigeration? Further, they would be building an equity in automatic refrigeration. Then, say two years hence, if they could afford something better, they are better prospects than they would have been had they been without automatic refrigeration during the interim. Then, they can move in the best American society. They've got a trade-in and can demand an allowance. They are right in step with our national slogan 'An unpaid balance in every home.'

"Perhaps you may not want to go into the disposition of these relics yourself, but there may be refrigerator repair people who would co-operate with you, taking the trade-ins at a price and giving you the names and prices paid by purchasers."

After digesting Mr. Rutherford's suggestion, there is perhaps one point left to discuss, and that is the question of persuading the "masses" to choose gas refrigeration, once they are induced to buy.

Some years ago, as a combination utility sales manager, I faced the problem of—which?—gas or electric. I was considerably influenced in deciding *to promote gas refrigeration exclusively* where gas service was available because there were 20 electric promotional dollars being spent to every one dollar for gas nationally. In other words, it was gas against a powerful electric field. We figured that the electric could well take care of itself through specialty dealers, but if we

(Continued on Page 26)

At the Tulsa Convention

What Transpires When 2000-Odd Forward Looking Natural Gas Men Meet to Discuss Their Problems

By CRAIG ESPY and O. D. HALL

Assistant Publisher, GAS Staff Correspondent, GAS

DEVELOPMENT of air-conditioning, discovery of new scientific uses for natural gas, and an inmism permeated many of the addresses department, offer bright prospects for the gas industry. This spirit of optimism permeated many of the addresses and discussions at the annual convention of the Natural Gas Section, American Gas Association, in Tulsa, Okla., May 8-11.

Convention desk registration reached 833, but hotel reservations showed that 2223 persons attended, according to E. Holley Poe, New York City, secretary of the Natural Gas Section. "We have had the largest convention of any where exhibits were not featured. A well-balanced program was carried out and attendance upon all the sessions was unusual and very gratifying," said Mr. Poe.

Following eight separate conferences in the Mayo Hotel, convention headquarters, on Monday, the first day, the general sessions opened Tuesday morning in Akdar Temple, near the hotel. Thomas R. Weymouth, of New York City, chairman, and Elmer F. Schmidt, vice chairman, of the Natural Gas Section, presided over the general sessions.

Schmidt Nominated

Mr. Welmouth, vice president, Columbia Gas & Electric Corp., formerly was president of the Oklahoma Natural Gas Co., Tulsa. Mr. Schmidt, vice president, Lone Star Gas Co., has been nominated for chairman of the Natural Gas Section for the 1939-40 term to succeed Mr. Weymouth. Harry D. Hancock, Gas Advisers, Inc., Scarsdale, N. Y., was nominated for vice chairman of the section. Election of officers will occur at the annual convention of the American Gas Association in New York City in October.

Delegates were welcomed to Tulsa by Dr. T. A. Penny, mayor, who called attention to the shining cleanliness of Tulsa because of general use of natural gas. He was followed on the program with an address by Mr. Weymouth, who emphasized the encouraging possibilities of air-conditioning by means of gas.

"It is now possible," Mr. Weymouth said, "to obtain a complete unit for furnishing automatic control of humidity and temperature at a cost well within the means of the average householder who is able to afford a central heating plant. It seems to me to be impossible to estimate the value of this advance, for it furnishes the means of supplying a service quite complementary to house heating, from a seasonal standpoint, thereby not only improving the load factor of the existing house heating business, but also making it possible to add more house heating on a profitable basis."

"Possibly at no time in the recent past has the relationship between government and business bordered so closely upon outright competition," declared Baird H. Markham, director, American Petroleum Industries committee, New York City. "Government—federal, state and local—is creating a huge burden of debt, and through bonds and taxes is trying to force the consumer to satisfy the government's financial needs first."

The gas business was described as "A Mobilized Industry" by Conrad N. Lauer, president American Gas Association and president, The Philadelphia Gas Works Co., Philadelphia, Pa.

In presenting his subject, "It's Only the Beginning," Edward R. Guyer, president, Association of Gas Appliance and Equipment Manufacturers, and vice president, Cribben & Sexton, Chicago, Ill., said that despite the long depression the gas industry has held its own. "Various authoritative statistical and economical surveys show that the appliance manufacturers and merchandisers should expect from 20 to 25 per cent increase in sales in 1939. Using the last three months of 1938 as a barometer, leaders in the gas appliance and utility industries are predicting increased sales over 1937. Indications are that appliance prices will, in all probability, be stabilized this year and the unit price should be higher."

Manufacturers of gas appliances and equipment are subject to regulation, as well as utilities, George E. Frazer, counsel, Association of Gas Appliance and Equipment Manufacturers, Chicago, stated in an address entitled "Fifty Years of Regulation of Business." Labor costs, he declared, have increased in many cases 50 per cent because of government regulation of labor, social security and other factors. "Our labor costs are compulsory, but we do not have any legal right to demand fair prices." He appealed to utility executives and employes to cooperate with the manufacturers in making a better market for high quality merchandising and maintaining fair prices. The manufacturers, since 1930, have sustained operating losses of more than $30,000,000 and find new financing almost impossible.

A Changing Organization

Alexander Forward, managing director, American Gas Association, explaining the work of the association, said that the organization constantly is adapting its methods to changing conditions. He especially commended the work that Chairman Weymouth and Secretary Poe have been doing in the Natural Gas Section during the past year.

The value of advertising in securing new customers, especially in the homes, was emphasized by P. C. Lauinger, president, *Oil & Gas Journal*, Tulsa. In an illustrated address entitled "Men and Machines," Louis Ruthenburg, president, Servel, Inc., Evansville, Ind., reviewed steady progress in natural

gas refrigeration. He said that air-conditioning tests by his company have now advanced to a stage "which justifies a limited number of installations for field tests."

Although many utility rate cases have been reviewed by high courts since 1898, no rules have yet been laid down "crystallizing the methods of procedure for solution of fixing property values," P. McDonald Biddison, consulting engineer, Dallas, Texas, pointed out in a paper for which Ed C. Connor, consulting engineer, also of Dallas, was given joint credit. He declared the prime requirement in obtaining a fair valuation and a fair return is fairness in the approach to the problem and he questioned the probabilities of securing such treatment in cases where members of regulatory commissions, in election campaigns, "have pledged themselves in advance, and without knowledge or investigation of the matters involved, as to action on rates."

Safety Discussed

Safety was awarded a place on the general sessions program, and J. C. Flanagan, United Gas Pipe Line Co., Houston, Texas, discussing this subject, admonished safety departments to function only in advisory capacities and not attempt direct control of personnel or departments in such matters. To be most effective such safety efforts should have full and visible support of top-management.

Gas utility managers and employes were commended for their high degree of cooperation with the United States Bureau of Mines in the research and experimental work of the bureau, in a paper prepared jointly by Dr. John W. Finch, director, and R. A. Cattell, chief engineer, petroleum and natural gas division of the bureau in Washington D. C. Committees of the A. G. A. also were given much credit for the bureau's progress.

Two prize-winning essays were commended for general study. They were read at the management symposium, Tuesday afternoon, T. R. Weymouth presiding, and were: "The Duties of a Local Manager," by Clyde E. Halloren, The Gas Service Co., El Dorado, Kan., and "The Duties of a District Manager," by L. D. Black, Jr., Community Natural Gas Co., Ennis, Texas. Each paper won top recognition and $25 in the national A.G.A. essay contest.

Will C. Grant, director of public relations, Lone Star Gas Co., Dallas, Texas, discussed the work of a utility public relations man in "Telling the Story of the Company to the Public." By use of cardboard placards he illustrated how the story can be told in a graphic and effective way. These cards showed that his company, last year, paid 55 kinds of taxes amounting to $2,500,000, and employed 14 people full time just to look after tax matters in its office, not to mention many other employes giving part time to this subject and in making reports and answering government questionnaires.

Many effective ways in which a home service department can be of substantial aid to management were enumerated by Miss Jessie McQueen, home service counsellor, A. G. A. Engineers can be of great assistance to utility management, A. W. Ambrose, Cities Service Gas Co., Bartlesville, Okla., showed in his address on "Engineering Assistance to Management."

The gas industry rather suddenly has taken color from the top and become sales minded, C. I. Weaver, president, Ohio Fuel Co., Columbus, Ohio, told the management conference. I. J. Underwood, Oklahoma Natural Gas Co., discussing "Management—Its Responsibility," declared that such responsibilities are three-fold — to the owners, to the employes, and to the customers.

Domestic Gas Sales

Domestic gas sales conferences opened Monday morning with an address by Harry Swenson, The Peoples Gas Light and Coke Co., Chicago, on the subject, "A Show Will Let Them Know." He urged better displays of gas merchandising.

F. M. Houston, chairman, Domestic Range Committee, A. G. A., Rochester Gas & Electric Corp., Rochester, N. Y., in his subject, "The Gas Triangle," deplored past policies of some gas companies as advertising gas as the "cheapest" fuel. Their products should be sold on the basis of superior quality, convenience and safety, he believed.

Continuity of operation, greater responsibility and smaller risk would suggest financing public utility dealers in gas merchandising on easier terms than many other classes of business, Percy Hall, vice-president, Manufacturers Trust Co., New York, told the convention.

Natural gas utilities should extend far greater aid to dealers in gas appliances, urged W. G. Wiegel, Lone Star Gas Co., Dallas, Texas. F. X. Mettenet, Peoples Gas Light & Coke Co., Chicago, explained the importance of market surveys. These aid management by giving definite information on the potential market, and help advertising managers and sales departments to go out intelligently after the business.

Discussing the subject, "Sales Programs Produce Results," John H. Warden, Oklahoma Natural Gas Co., said that sales programs and campaigns are effective only when they have sales appeal to employes, the manufacturers, and public.

ABOVE: Harry D. Hancock, Gas Advisers, Inc., New York City (left) and E. H. Poe, Secretary, Natural Gas Section, two of the convention's busy men.

LEFT: F. J. Harlow (left), K. S. Adams (center), Phillips Petroleum Co., and Henry O. Loebell, Natural Gas Pipe Line Co. of America, Chicago, talk it over.

RIGHT: Thomas R. Weymouth (left), Chairman, Natural Gas Section, is being shown around Woolaroc Lodge by Host Frank Phillips, Phillips Petroleum Co.

General luncheon for delegates to the May convention of the Natural Gas Section of the American Gas Association.

In a home service symposium, conducted by Mildred R. Clark, Oklahoma Natural Gas Co., many questions asked by management about this work were answered by women heads of such departments in various natural gas utility companies. Those speaking in the conference included Gladys Price, Los Angeles, Calif., chairman Home Service Committee, A. G. A.; Louise Petersen, The Gas Service Co., Hutchinson, Kan.; Albertine Berry, Lone Star Gas Co., Dallas, and Margaret Thompson, Arkansas-Louisiana Gas Co., Little Rock, Ark. Two men speakers, whose work brings them into cooperation with home service departments, praised the work as a potent force in holding customers for natural gas and securing new business, both in sales of gas and appliances. These speakers were: Harry C. Canup, sales manager, Hales Mullaly Co., Oklahoma City, and R. S. Agee, sales promotion manager, Association of Gas Appliance and Equipment Manufacturers, New York, N. Y.

Presiding over the Domestic Gas Sales conferences were F. X. Mettenet, chairman, and Davis M. DeBard, vice chairman, commercial section, A.G.A.

Industrial Sales

The time has arrived when every natural gas company should go after the summer air-conditioning business as aggressively and progressively as it does the house heating load, advised Charles R. Bellamy, chairman, Industrial and Commercial Air-conditioning Committee, Industrial Gas Section, A. G. A.

Frank H. Trembly, Jr., Philadelphia, chairman, Industrial Gas Section, said that the Committee on General Gas Research is sponsoring a supervisory research in new and approved gas applications, in atmosphere furnaces for metal treating, in perfecting immersion melting of metals, radiant-tube furnaces for metallurgical and enameling work, luminous-flame heating applications, dehydrating summer air-conditioning, and many other industrial and commercial applications.

C. F. Henness, Public Service Co. of Northern Illinois, Chicago, said that industrial gas sales, in most cases, should be approached from a salesman's standpoint rather than an engineer's.

A survey and discussion of "Economics and Sales Possibilities of Gas Engine Loads" was presented by D. W. Reeves, Oklahoma Natural Gas Co., Tulsa, and chairman of the gas engine power committee. George W. Rowland, Cities Service Gas Co., Bartlesville, Okla., discussed the "Possibilities and Effect of Oil Industry Loads on Gas Companies' Earnings." Frank H. Trembly, Jr., chairman Industrial Gas Section, and Frank S. Kelly, Jr., Arkansas-Louisiana Gas Co., Shreveport, La., presided over the conferences.

"Latest Development in Pipe Coating Methods" was reviewed in the Natural Gas Transmission Conference by K. N. Fancher, Northern Natural Gas Co., Omaha, Neb. "Although highest quality coating materials are important, the solution of the pipe line corrosion problem depends upon the methods and care with which materials are applied," he said.

A foreman should extol the virtues of the community where he is stationed rather than a former place of residence, Aubrey Boyd, Lone Star Gas Co., Cavuga, Texas, declared. He particularly emphasized the importance in offering constructive help and suggestion in local community affairs not directly connected with the company.

E. G. Hammerschmidt, Texoma Natural Gas Co., Fritch, Texas, told the Natural Gas Transmission Conference that gas companies, as a whole, have found that it is desirable to install dehumidification plants on many of their high pressure trunk lines, in order to prevent formation of gas hydrates. (See *G A S*, May, 1939, p. 30.)

Discussing leakage, James A. Martin, Lone Star Gas Co., pointed out the possibilities of a "roving department" in taking care of many items for reducing leakage and promoting better service.

Information on "The Use of Carbo-Seal Anti-Leak" was presented by D. B. Williams, Carbide and Carbon Chemicals Corp., New York City. John Clark, Hope Natural Gas Co., Clarksburg, W. Va., had a paper on "Dehydration and Resultant Effects on Pipe Line Carrying Capacity and Operation." (See page 29.) The "Possible Effect of Lightning on Underground Pipe Lines" was discussed in a paper by R. G. Strong, Natural Gas Pipe Line Co. of America, Chicago. The subject, "Small Intermediate Compressor Stations as a Means to Increase Main Line Capacity," was presented in a paper prepared by H. C. Wallace, Commonwealth Gas System, New York.

George H. Parker, St. Louis, Mo., chairman, and George Young, Detroit, Mich., vice chairman, Transmission Committee, A. G. A., presided at the transmission conferences.

Natural Gas Production

J. W. Cowles, Shell Petroleum Co., Tulsa, stressed several points on which the gas and natural gasoline men can unite and advocated a unified and standard form of dry gas contract, to be approved by both organizations.

C. P. Parsons, Halliburton Oil Well

GAS Camera

No. 1 (left to right): B. M. Laulhere, S. S. Donaldson, G. W. Carbee, and H. P. George, all of Southern California Gas Co., Los Angeles, Calif.

No. 2 (left to right): H. A. Kahler, The Sprague Meter Co., Oklahoma City; C. W. Cardwell, Lone Star Gas Co., Shamrock, Texas; M. C. Abeles, City Light & Traction Co., Sedalia, Mo.; J. A. Dallow, National Supply Co., Toledo; J. H. Zeigler, Wilcolator Co., Newark, N. J.

No. 3 (left to right): A. C. Grant, Minneapolis-Honeywell Regulator Co., Minneapolis; H. T. Ryan, Robertshaw Thermostat Co., Youngwood, Pa.; Mrs. Jack Torbert, Kansas City, Kan.; Willard G. Wiegel, Lone Star Gas Co., Dallas; R. H. Lewis, Ruud Manufacturing Co., Pittsburgh.

No. 4: Don Sillers, Lone Star Gas Co., Dallas; L. D. Wittkower, Geo. D. Roper Corp., Dallas; E. G. Hammerschmidt, The Texoma Natural Gas Co., Fritch, Texas; W. H. Carson, Dean of Engineering College, University of Oklahoma, Norman; M. W. Walsh, Louisville Gas & Electric Co., Louisville, Ky.

No. 5: Carl G. Liden, Ohio Foundry Manufacturing Co., Dallas; J. C. Reid, Southern Union Gas Co., Dallas; J. R. Cole, New Mexico Gas Co., Santa Fe, N. M.; J. W. Duvall, Consolidated Gas Utilities Corp., Oklahoma City.

No. 6: J. C. Mansfield, Geo. D. Roper Corp., Dallas; O. H. Moore, Lone Star Gas Co., Dallas; Sam M. Gamble, Lone Star Gas Co., Ranger, Texas; C. A. Prophit, United Gas Corp., Monroe, La.

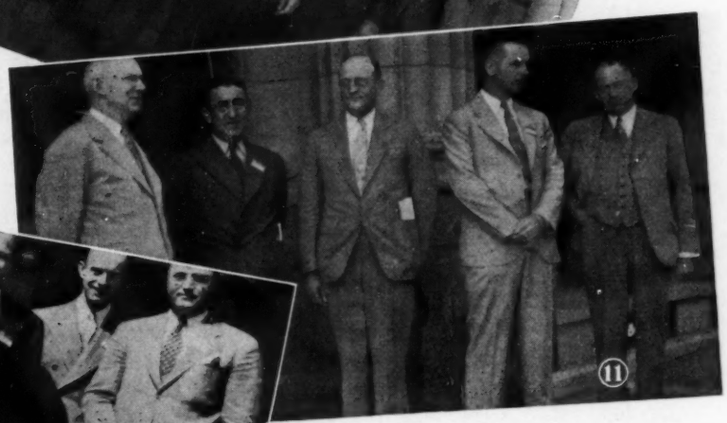
No. 7: C. D. Greason, Gas Service Co., Kansas City, Mo.; Joe W. Brown, Lone Star Gas Co., Dallas; E. D. Milener, American Gas Association, New York; A. I. Wallace, American Radiator & Standard Sanitary Corp., Chicago; Karl W. Schick, Minneapolis-Honeywell Regulator Co., Kansas City; Paul Ford, Kansas City Gas Co., Kansas City.

Between the Sessions at the American Gas Association's Annual Natural Gas Section Convention in Tulsa. The Delegates — in Formal Array — Pose for G A S Camera

No. 8: Herbert L. Bohon, Tappan Stove Co., St. Louis; R. S. Agee, A.G.A.E.M., New York, N. Y.; J. E. B. Gibbons, Dresser Manufacturing Co., Bradford, Pa.; Chas. T. Davis, Dresser Manufacturing Co., Dallas; P. McDonald Biddison, P. McDonald Biddison Co., Dallas.

No. 9: F. S. Rutherford, Republic Steel Corp., Washington, D. C.; Ralph Hendrickson, Crane Co., Chicago; H. O. Loebell, Natural Gas Pipe Line Co. of America, Chicago; R. A. Ransom, Panhandle Eastern Pipe Line Co., New York, N. Y.

No. 10: W. R. McLaughlin, Pittsburgh Equitable Meter Co., Dallas; L. D. Black, Community Natural Gas Co., Ennis, Texas; L. L. Dyer, Lone Star Gas Co., Dallas; L. M. Scholl, Community Natural Gas Co., Corsicana, Texas; H. A. Ehrmann, Consolidated Edison Co. of New York, Inc., New York City; T. O. Cheatham, Community Natural Gas Co., Waxahachie, Texas.



No. 11: C. H. Seidenglanz, Seidenglanz & Co., Dallas; W. J. McNally, Natural Gas Service Co., Skiatook, Okla.; N. A. Newton, Oklahoma Natural Gas Co., Tulsa; F. S. Kelly, Jr., The Arkansas-Louisiana Gas Co., Shreveport; C. A. Breitung, The Southwest Natural Gas Co., Ada, Okla.

No. 12: H. D. (Mike) Meuffels, Missouri Power & Light Co., Jefferson City, Mo.; K. C. Tomlinson, American Meter Co., San Francisco; W. R. Nason, General Controls Co., Houston; Porter W. Allen, McWane Cast Iron Pipe Co., Birmingham, Ala.

No. 13: B. H. Gardner, Columbia Engineering Corp., Columbus; C. H. Zachry, Southern Union Gas Co., Dallas; E. C. Joullian and Norman Hirschfield, Consolidated Gas Utilities Corp., Oklahoma City.

No. 14: Jim Satterwhite, Westcott & Greis, Inc., Tulsa; C. H. Waring, Kansas City Gas Co., Kansas City; Fred Armbruster, Middle West Service Co., Chicago; Wesley F. Wright, Dallas Gas Co., Dallas; C. B. Dushane, American Meter Co., Chicago; John Van Norden, American Meter Co., New York City, N. Y.

Cementing Co., Duncan, Okla., told about new uses of cement in completing and reconditioning gas wells. William H. Vaughn, Vaughn Gas Process, Inc., Tulsa, discussed "The Feasibility of Recycling Gas from High Pressure Gas Reserves." Singled out to lead discussion on several important production problems were: C. K. Eilerts, R. Vincent Smith, R. C. Wright, M. A. Shellhardt, E. J. Dewees, and W. H. Barlow, all of the United States Bureau of Mines, Bartlesville, Okla. J. H. Dunn, Amarillo, Texas, chairman, Production Committee, A. G. A., was in charge of the conference.

Technical and Research

The main Technical and Research Committee, H. C. Cooper, Pittsburgh, Pa., chairman, heard reports from chairmen and a paper on "Field Practices Dealing with Gas Hydrates in Natural Gas Pipe Lines," by W. M. Deaton and E. M. Frost, Jr., U. S. Bureau of Mines, Amarillo, Texas. The report of the Gas Measurement subcommittee was presented by Thomas R. Weymouth. N. C. McGowen, United Gas Pipe Line Co., Shreveport, La., reported on gas well deliveries. Harry D. Hancock, Gas Advisers, Inc., New York, reported for the pipe line subcommittee.

The Accounting Section listened to several papers, including: "Accounting Section Activities and Organization," by H. A. Ehrmann, New York, chairman of the section; "Customer Deposits," by Oakah L. Jones, Oklahoma Natural Gas Co., Tulsa; "Property Reserves," by F. B. Flahive, Columbia Gas & Electric Corp., New York, and "The Effect of the New Classification of Accounts on Natural Gas Production Accounting," by L. L. Dyer, Lone Star Gas Co., Dallas.

Employe education was given special attention at a conference with C. L. Hightower, director of safety, United Gas Pipe Line Co., Houston, Texas, in charge. E. H. Poe, secretary, Natural Gas Section, reviewed what gas companies are doing about employe education.

A varied safety program was presented in the accident prevention conference. The subject, "Value of Meetings in the Accident Prevention Program," was discussed by Charles Miller, The Texas Co., Houston, Texas, and Harry Markee, Bartlesville, Okla. On the program for discussion of the subject, "The Importance of Investigation of Employe Personal Injury Accidents," were R. L. Conway, Jr., United Gas Pipe Line Co., Houston; Hadley Myers, Sinclair Companies, Tulsa, and Robert Huffman, Oklahoma Natural Gas Co. L. B. Denning, Jr., vice president, Community Natural Gas Co., Dallas, presented the subject, "The Public Liability Problem in Connection with Domestic and Industrial Sales and in Operation of Mains."

Some interesting subjects were presented at noonday luncheons by leaders of the industry. Frank H. Denton, president, Mellon Securities Corp., Pittsburgh, Pa., at a Tuesday noon luncheon, delivered an address on "Natural Gas and the Banker." He said that the natural gas industry can now borrow money at less cost than at any time in its history. A principal reason is that the banker, the bond buyer and the consumer are thoroughly convinced of the value of natural gas as a fuel and that adequate gas reserves exist.

At the Woolaroc Ranche barbecue are (left to right) Ross M. Stuntz, Cities Service Gas Co., Bartlesville; Mrs. C. J. Dodds; Charles Hazelton, American Radiator Co., Kansas City, Mo.; Lucille Canaday, Oklahoma Natural Gas Co., Tulsa; John Andrews and C. J. Dodds, Kansas Public Service Co., Lawrence, Kan.

Pioneers of the natural gas industry were honored at a noonday luncheon attended by about 500 delegates. Two of the men who founded the Natural Gas Association of America at a meeting in Kansas City, Mo., Feb. 20, 1906, were present and made short talks reviewing historical incidents. These were C. W. Sears, of Pasadena, Calif., and Col. M. W. Walsh, general superintendent, Louisville Gas & Electric Co., Louisville, Ky.

The Industrial Gas Sales Conference held a noonday luncheon Monday which was addressed by Walter C. Beckjord, vice president and general manager, Columbia Gas and Electric Corp., New York, on the subject, "Management Views the Growing Industrial Gas Load."

Entertainment Features

Listed on the program as an entertainment feature was the ladies' luncheon, Tuesday noon, at the Tulsa Club. The Tulsa suppliers were hosts at a stag open house, Tuesday afternoon and evening, at the Tulsa Club. A. J. Kerr, Tulsa, district manager, Pittsburgh Equitable Meter Co., presided. The grand ball and entertainment in the Crystal ballroom of the Mayo Hotel, Wednesday night, was well attended. Especially featured was a revue entitled "All America," presented by Kathryn Duffy. Joe Linde's orchestra furnished music for the revue and the dancing. Golf privileges were arranged for all the delegates. The Oklahoma Natural Gas Co. was host at the Akdar ball Monday and Wednesday nights.

Thursday afternoon many of the delegates were the guests at a buffalo barbecue at Woolaroc Ranch, near Bartlesville, a famous Oklahoma showplace ranch and home of Frank Phillips, chairman of the board, the Phillips Petroleum Co.

Attending the convention was Miss Mary Spear, an employe of the Natural Gas Division and its predecessor, the Natural Gas Association of America, since 1917. She has attended every convention of the Natural Gas Division for the past 22 years and is employed in the New York headquarters.

Public inspection of the Oklahoma Natural Gas Co.'s All-Gas Home in a beautiful residential section of Tulsa was an interesting feature of the convention. Many of those who could not attend the open house program at the home Tuesday afternoon listened from convention rooms to a 15-minute radio broadcast of the event. Joseph Bowes, president Oklahoma Natural Gas Co., officially welcomed a group of association officials and other honored guests to the open house program.

A Mobilized Industry

Excerpts from an Address by Conrad N. Lauer, President, American Gas Association, delivered before the Natural Gas Section Convention, Tulsa, Oklahoma, May 9, 1939

THOSE engaged in the gas business are confronted just now with a period of readjustment, with problems that require much energy and concerted action, that need just as much thought and just as much care as any problems faced in the early history of our industry. Fortunately, those in the industry are better equipped now than ever before to meet their problems. They have availed themselves of an intangible asset that produces tangible results—*organization.*

• • •

Mobilized individual endeavor creates a multiplication of power that results in greater efficiences, wider scope of usefulness, universally good service and buoyed morale in the industry.

• • •

Through our Association we are enabled to realize the importance of functions the gas industry performs and to be sure what our duties and our responsibilities are to the *public, the employe* and the *investor* alike and to analyze and appraise their attitude toward us.

• • •

The direct tax paid on gasoline in 1938 exceeded by $431,000,000 the gas service bills for all the homes in the nation. The average amount of tax per family on gasoline was $32.23 in 1938 while the average gas bill for domestic or residential gas was $33.32 in the nation and $36.60 in the State of Oklahoma. And in that gas bill were taxes amounting to approximately 11 per cent of the total. The fact is that using five to a family as a basis, national statistics indicate that the average amount of taxes, of all kinds, paid by the same family is about 20 times the average residential gas bill for the same family.

• • •

But let us look a little deeper into the comparative value of natural gas. If a buyer were in the market last year for a million B.t.u.'s of energy he could purchase them in the form of natural gas for 35c, in the form of manufactured gas for $1.90 and in the form of electrical energy for $6.82.

• • •

The gas industry has shown itself to be big in its powers of self-control and self-policing. The most outstanding example of this characteristic of the industry was the establishment of the American Gas Association Testing Laboratory in 1924 to the end that the best interests of the public may be served to the fullest possible extent by testing and identifying gas appliances which meet basic national requirements for safety, durability and efficiency. One can count on the fingers of one hand the number of American industries that have established and conducted similar movements in the public interest.

• • •

The Home Appliance Planning Bureau of the American Gas Association was organized at a very propitious time for it is likely that housing activities will offer the gas industry the greatest of its opportunities in the future. Responses to the Bureau's recent inquiry regarding the use of gas for cooking, water heating, refrigeration and home heating in the one and two family dwellings constructed during 1938 are most illuminating.

Of 68,000 such new homes constructed in natural gas territory 91 per cent used gas for cooking, 88.9 per cent for water heating, 10 per cent for refrigeration and 77 per cent for home heating. Ten per cent of these homes used gas for all four-jobs.

Of 7200 homes constructed in mixed gas territory 90 per cent used gas for cooking, 78 per cent for water heating, 23 per cent for refrigeration and 42 per cent for home heating. Thirteen per cent of these homes used gas for all four big jobs.

Of 27,000 such new homes constructed in manufactured gas territory 82 per cent used gas for cooking, 39 per cent used gas for water heating, 13 per cent used gas for refrigeration and 10 per cent for home heating. Seven per cent of these homes used gas for all four big jobs.

The gas utility and the appliance manufacturer have a common objective —that of increasing the use of gas for all domestic services. No manufacturer interested in the sale of one type of appliance can afford to ignore the competitive inroads on any part of the domestic load. Realizing the need for the fullest coordination, the Association has recently formed a new Housing and Realty Projects Committee jointly representative of the manufacturers and gas utilities.

• • •

One of the most significant and gratifying developments in the gas industry is the reversal of the downward trend in the sale of gas for domestic uses other than house heating.

• • •

What are the reasons for this reversal of trend in domestic sales while the general industrial activity was falling off? The answers are multifold in the reasons advanced. Only a few companies report reduced competition. A larger number believe that changed living habits might have helped their sales. More and better local advertising, the industry's National Advertising Program and its other coordinated sales programs are mentioned by the majority of companies as having stimulated greater sales activities in their territories.

• • •

The gas industry is now mobilized nationally to adjust itself to national competitive sales trends. We must realize that more dramatization and showmanship in presenting our services to the public will be of greatest assistance in gaining our portion of the consumer's dollar. Modernity of sales and advertising appeals is just as essential as the modernity of the equipment itself that we are selling.

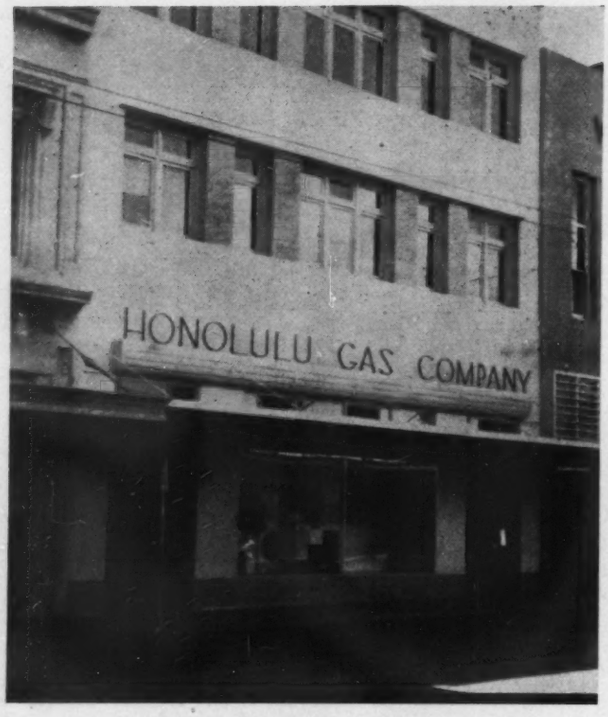
• • •

The future success of the industry lies in our continuing our organized front, not as a line of defense but as an aggressive front line offense. We must continue to blaze the new trails that are open to us and maintain through our Association a mobilized gas industry.

INSTALLING ADSORPTION

By WARREN L. McKAIG

Assistant Engineer, Honolulu Gas Company, Limited



Main office of the Honolulu Gas Co., Ltd., Honolulu, T. H.

HONOLULU GAS CO., LTD., has installed in its main building a combination adsorption and refrigeration system for comfort air conditioning.

In semi-tropical climates, such as in Hawaii, where outside dry bulb temperatures are with few exceptions between 70° F. and 85° F. throughout the year with atmosphere having between 90 and 115 grains of moisture per lb. of dry air, special consideration must be given the problem of producing normal humidity conditions without reducing inside temperatures below the comfort level. This is very essential because persons accustomed to such a climate are particularly sensitive to such reduction of temperature.

Since the process in which air is cooled below its dew point in order to dehumidify and then reheat to the proper temperature is indirect and often complicated, some direct method of dehumidification has been the goal of the air conditioning engineer.

One of the simplest and most effective types of direct dehumidifier is the silica-gel adsorption unit. In these units the moisture in the air which passes through the beds of silica-gel is physically absorbed in the countless microscopic pores of the silica-gel crystals. After an adsorbing cycle of predetermined length, the silica-gel beds are heated by entrained air and products of combustion of a gas burner and thereby relieved of the moisture that has been absorbed. This process is accomplised continuously by the use of two separate sets of beds in each unit, one being activated while the other is absorbing. The functions of the unit are under complete automatic control from an instrument sensitive to humidity.

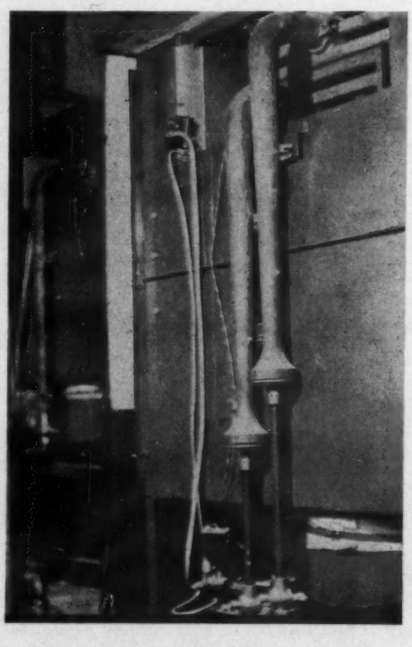
The installation of air conditioning in the offices of the Honolulu Gas Co., Ltd., involves the first and second floors of the office building in down town Honolulu. The volume of the conditioned space totals 56,400 cu. ft. and the average occupancy is 60 percent.

On the basis of an inside condition of 77 grains of moisture per lb. of dry air, the dehumidification required is calculated to be 405,000 grains of moisture removal per hour. This load is composed of moisture in ventilation air, latent load of occupants, and moisture infiltration.

The sensible cooling effect required to produce 78° F. dry bulb temperature in the space is calculated to be seven tons of refrigeration. This load consists of heat transmission through walls, floors, and ceilings, lighting load, sun effect, sensible heat of occupants, and two degrees cooling of dehumidified air from silica-gel units. This load does not include the sensible heat removed by the water in dry air coolers. Since available cooling water temperature is 74° F. to 75° F., the dry air from the dehumidifiers can be cooled to 80° F., but the internal sensible cooling load must be carried by a mechanical refrigeration unit.

The system of equipment selected for this duty consists essentially of two gas activated silica-gel adsorption dehumidifiers, one handling the ventliation supply of fresh air, the other handling recirculated air; a well and deep-well type pump; an extended surface serpentine water coil for dry air cooling from each dehumidifier; filter banks of viscous treated spun glass; an electric motor driven Freon-12 water cooled condensing unit; direct expansion Freon-12 evaporators, main supply air fans, one for the first floor, and one for the second floor, a complete system of air distributing duct work; and auxiliary automatic controls.

The dehumidifier units have an air handling capacity of 1900 cu. ft. per minute. The unit treating outside air for ventilation handles 1300 M c.f. and the recirculating dehumidifier treats 600 M c.f. manufactured oil gas having a calorimeter rating of 515 B.t.u. per cu. ft. and specific gravity of 0.45 is used for activation. The No. 14 unit burns gas at the rate of 408 cu. ft. per hour and the smaller unit has a burner rate of 195 cu. ft. of gas per



End view of dehumidifiers, showing gas burners in place.

A COMBINATION REFRIGERATION AND COMFORT AIR CONDITIONING SYSTEM

hour. Hourly consumption of gas is 0.7 of the burner rate since the burners operate during 7 minutes of the 10 minute activation cycle, the other 3 minutes being used as an air purge.

Cooling of the dry air from the dehumidifiers is accomplished in two copper tube, extended surface, serpentine water coils. One coil is placed in the discharge air stream from each unit. Each coil is 10 rows of tubes deep in the direction of air flow, and the cooling water from the well water pump is circulated counter-flow to produce a leaving air temperature of 79° F. with an entering water temperature of 74° F. In this process the water rises to approximately 88° F. as it leaves the coil and flows to waste.

The air is completely filtered before entering the dehumidifiers and again before entering the main cooler and air supply fans, by means of viscous treated spun glass filter banks.

A bank of Freon-12 evaporators cools the mixture of dehumidified and return air in the main cooler. This bank of direct expansion evaporators is divided so that the amount of cooling can be regulated separately for the first and second floor spaces.

The accompanying flow diagram, Fig. 1, illustrates the operating cycle of this system. As indicated in this diagram the dehumidified and cooled air passes from dry air coolers into the plenum chamber where it mixes with return air before passing through the main filter bank and Freon-12 evaporators into fans supplying air to the rooms.

Control of the dehumidifiers is arranged in two steps by two humidistats set two per cent apart to provide operation of the ventilation dehumidifiers first on demand for dehumidification. If the first dehumidifier cannot meet the demand, the second unit comes on to handle the peak loads.

In the event that both dehumidifiers are off, the room condition being satisfied, an automatic damper opens a fresh air by-pass directly into the plenum chamber so that ventilation requirements are fulfilled at all times. Provision is also made by manual dampers for providing full fan volume of fresh air. The main fans operate steadily during the day. The amount of final cooling for each floor is regulated by a thermostat on each floor operating solenoid valves in the refrigerant liquid line.

This direct system of air conditioning was installed to show the practicability of gas air conditioning, and also to demonstrate how comfortable persons in an air-conditioned space can be when humidity is properly controlled and a minimum of sensible cooling is supplied. It is found that persons are comfortable and at the peak of their working efficiency when the relative humidity is reduced to 54 per cent even though the dry bulb temperature is slightly higher than normal. Under such climatic conditions it is easily understood how advantageous it is to employ a system which has separate and distinct control over humidity and temperature, and is not limited to any particular outside conditions.

The Honolulu Gas Co. is justly proud of the fact that its gas rates are on the same level with cities of equal size in Continental United States. With a gas rate of 70 cents per 1000 cu. ft. for industrial service, the Honolulu Gas Co. can actively compete in the air conditioning field by offering the customer an air conditioning apparatus at reasonable operating cost.

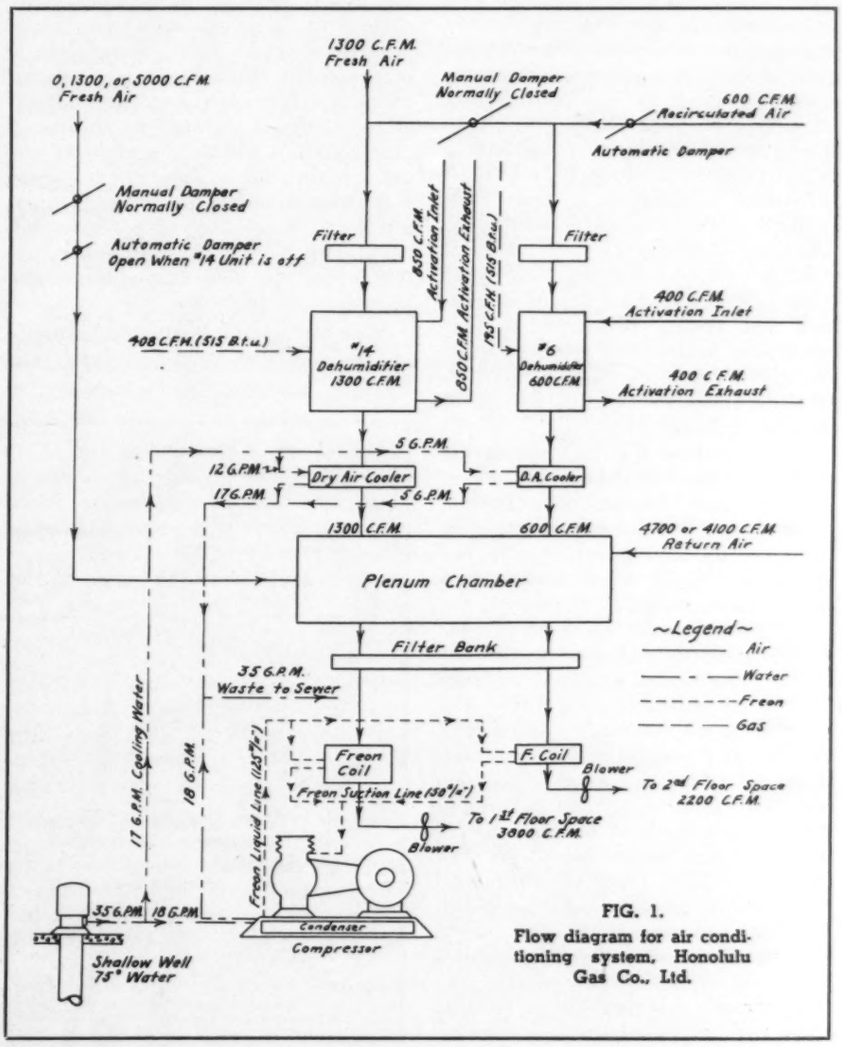


FIG. 1.
Flow diagram for air conditioning system, Honolulu Gas Co., Ltd.

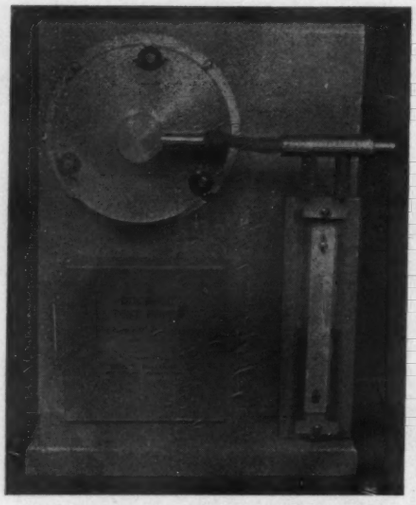


FIG. 1. Original apparatus for odorant testing.

Colorimetric Method for the Measurement of Gas Odorant Concentration

By C. E. GILL

The Sharples Solvents Corporation, Chicago, Illinois

THE gas industry has long needed a positive, quick, simple and inexpensive method of measuring the odorant concentration in odorized gas. This article describes a satisfactory method of accomplishing this measurement and some of the principal ways it can be profitably used by gas distributing companies who add warning agents to their gas. It is possible to determine by observation the minimum safe level of odorant concentration. Most companies now odorizing have had this experience. This test method makes it possible to insure that this odor level is maintained with a maximum of accuracy and record permanency. This method of testing was developed for use with Pentalarm for the Sharples Solvents Corp. by O. K. Smith, of Davenport, Iowa.

The procedure for the colorimetric analysis of gas for Pentalarm content is simple and foolproof. The method as finally worked out requires the use of a compact, inexpensive piece of equipment (Fig. 1, original apparatus) and small sensitized filter paper.

The test is conducted by allowing a definite volume (1½ to 3 cu. ft.) of the gas to be analyzed to pass through the sensitized filter paper. The reaction of the Pentalarm, which is of definite and controlled composition, produces a bleached area. When this is exposed to a bright light, it turns to a permanent shade of brown. The intensity of this brown color can then easily be used to check the Pentalarm content of the gas by comparing it with the color produced by known concentrations. Normally, the test requires about two hours, but for ordinary control purposes this time can be reduced to as little as 30 minutes. A drawing showing the details of construction of the commercial equipment is shown in Fig. 2.

In the development of the method, a careful search of the literature revealed several methods for the analysis of the Mercaptan content of petroleum products, but none for its determination in gas. The reaction which gave the most promise for use with gas was the one in which the Mercaptan combines with a copper soap. Under these conditions the bright blue of the copper soap changes to a pale yellow, which, on exposure to bright light, changes to a permanent brown. Previously copper oleate has been prepared from Elaine oil and copper nitrate. As the exact neutralization of oleic acid with sodium hydroxide is difficult, a copper soap was prepared by adding copper nitrate to a solution of cocoanut oil soap. This gave a bright blue precipitate, which was then washed thoroughly with water and dried.

With the use of Pentalarm, consisting essentially of Amyl Mercaptan, the problem became simply one of determining the correct carrier for the oleate, the shade of blue best suited to this type of analysis, and the amount and the rate of flow of the gas to be used in the test.

Considerable research finally resulted in the development of a sensitized filter paper carrying a definite amount of the copper soap.

In the final development work, known concentrations of odorant in air were prepared in a 10 cu. ft. holder representing 0.5, 1.0, 1.5 and 2.0 lbs. of Pentalarm per million cu. ft. All tests were run using 3.0 cu. ft. of air or gas and a rate of 1.5 cu. ft. per hour.

According to the reaction,

$$4RSH + 2CU(01)_2 = 2\ CuSR + R_2S_2 + 4\ H(01)$$

one milligram of Amyl Mercaptan will react with approximately three milligrams of copper oleate. Thus the Amyl Mercaptan in 1 cu. ft. of gas, odorized with Pentalarm to the extent of 1 lb. per million cu. ft., would require about

(Continued on Page 29)

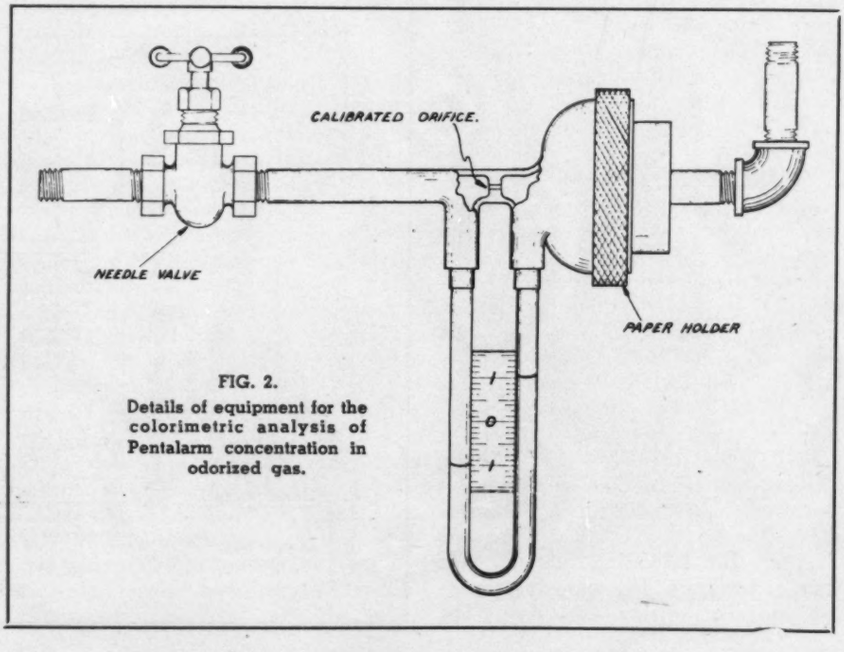


FIG. 2.
Details of equipment for the colorimetric analysis of Pentalarm concentration in odorized gas.

The Value of the Water Heating Load and How to Secure It

By WILLIAM H. HOWE

Commercial Manager, The Tucson Gas Electric Light & Power Company, Tucson, Arizona*

BASED on experiences in Tucson, Ariz., a detailed estimate has been made of the respective increments for cooking, manual water heating, and automatic water heating through the 12 months of the year. Summarizing briefly, we find this analysis indicates the following pertinent data:

Appliance	*Therms per Year*	*Increment Gross Rev. per Year*
Range	50	$11.00
Manual Water Heater	71	14.50
Auto. Water Heater	281	43.18

It is obvious and otherwise apparent that every home using gas for cooking will use gas for heating water in one form or another, and a superficial inspection of the foregoing data indicates an automatic water heater will use approximately four times the amount of fuel and produce about three times the amount of gross revenue that a manual water heating job will do. Herein lies the proof that an automatic water heater educates the public to the use and value of hot water service. We have yet to meet the person who would willingly change from an automatic water heater to other forms of water heating.

Load Building Value

From this analysis we have gained some idea of the value of the water heating load, particularly the automatic water heater, which may appear to be somewhat startling, and yet here is a purely incremental load with the highly desirable qualities of modest demand and relatively high load factor of which many of us in the gas industry may never have had a true perspective—particularly its relation to an integrated load building program. In our many and varied promotional activities, we might further consider the value of the automatic water heater.

In considering how the water heating load may be secured, it should be borne in mind that one program which might prove highly effective in one locality may prove to be a total loss in some other community, and vice versa. The promotional program which we are outlining herein is given from actual experience and is not offered as a panacea or cure-all.

In evolving our promotional program for the drive on the automatic water heating load, it is obvious there are many factors affecting the composite picture in attaching the automatic water heating load. First of all, and of primary importance, is selling the value of 24-hour hot water service and creating a desire in the mind of the prospect for such service. Second, is real selling effort on the part of the salesman to go out and sell. This, of course, is activated by the profit motive and requires, therefore, a return for his services not only commensurate with his efforts but something in addition to retain his incentive and drive to continue selling automatic water heaters.

A Cooperative Plan

With the foregoing factors in mind, we presented the following program of cooperation to the dealers and plumbers which was greeted with 100 per cent acceptance:

1. The utility will continue its coordinated program of advertising automatic water heaters. Our advertising display department is available to each and every plumber and dealer to assist you in laying out your own advertising at no charge.

2. The utility will pay the dealer an advertising allowance of $2.00 for each automatic water heater sold, provided the dealer or plumber will put $1.00 with such sum. In other words, the utility will stand up to two-thirds of the dealer's specific advertising.

3. The utility will finance the sales of automatic water heaters by the dealers at no charge or discount up to 24 months with 10 per cent down payment and carrying charges on the unpaid balance at one-half of one per cent per month. Monthly installments will be shown on purchaser's monthly bill for gas service.

4. An allowance of $2.50 each will be made by the utility to the dealer for each tank or side-arm water heater taken in trade by the dealer in the sale of an automatic water heater when delivered at our warehouse.

5. The utility will pay the dealer $1.00 for the city permit necessary in the installation of an automatic water heater.

6. The utility will pay the dealer's salesmen $5.00 each as a bonus for the sale of automatic water heaters.

In addition to the foregoing, this company made expenditures for advertising of water heating over its own name to the extent of probably $1000 per year. During the five years of 1934 through 1938, it is apparent some 2200 automatic water heaters were added to our lines of which only about 70 per cent were actually reported by the dealers. The remaining 30 per cent is largely accounted for as installed by building contractors who would not ordinarily report to a utility.

Average Cost

Assuming this company spent $1000 per year in advertising water heaters and paid the dealer $10.50 each on 70 per cent of the heaters actually installed, we find the approximate average cost of attaching this load as follows:

2200 x $10.50 x 70%	$16,170
5 Yrs. Adv. @ $1,000	5,000
2200 Water Htrs. @ $9.62	$21,170

In the analysis previously mentioned it was shown that the capitalized incremental value of an automatic water heater is $289, and it is obvious, therefore, we were paying in the form of promotion about 3⅓ per cent of the capitalized value of the load or about 31.6 per cent of the first year's net revenue.

*The treatise by Mr. Howe herewith produced was awarded first prize in the nation-wide essay contest conducted by the National Automotive Gas Water Heater Sales Committee of the Association of Gas Appliance and Equipment Manufacturers. (See p. 66.)

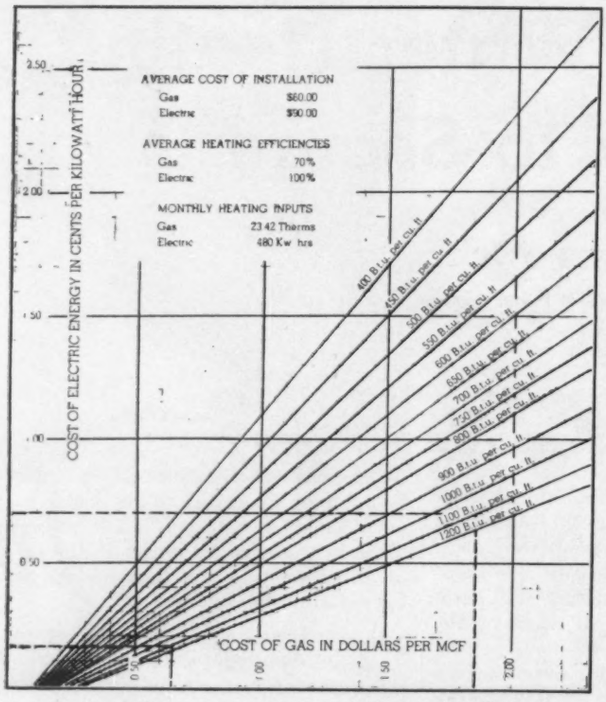

AVERAGE COST OF INSTALLATION
Gas $60.00
Electric $90.00
AVERAGE HEATING EFFICIENCIES
Gas 70%
Electric 100%
MONTHLY HEATING INPUTS
Gas 23.42 Therms
Electric 480 Kw hrs
COST OF ELECTRIC ENERGY IN CENTS PER KILOWATT HOUR
COST OF GAS IN DOLLARS PER MCF
400 B.t.u. per cu. ft.
450 B.t.u. per cu. ft.
500 B.t.u. per cu. ft.
550 B.t.u. per cu. ft.
600 B.t.u. per cu. ft.
650 B.t.u. per cu. ft.
700 B.t.u. per cu. ft.
750 B.t.u. per cu. ft.
800 B.t.u. per cu. ft.
900 B.t.u. per cu. ft.
1000 B.t.u. per cu. ft.
1100 B.t.u. per cu. ft.
1200 B.t.u. per cu. ft.

FIG. 1. Equal cost of operation graph, gas versus electricity, for automatic storage water heaters, based on B.t.u. operating ratio of 1.43 and 1 for gas as compared to electricity. Operating costs include amortization of investment at 1.93 per cent per month based upon life of 60 months with interest at 6 per cent per annum.

Here we have seen a growth in our summer load from 20 M c.f. per year to more than 28 M c.f., or more than 40 per cent; in addition, there has been a decided increase in number of consumers from a low of 4108 in the summer of 1933 to 6275 in 1938, which amounts to nearly 53 per cent. The compounded and composite picture, therefore, is that the total summer gas consumption has been increased nearly 106 per cent.

Factors of Value

There are other factors of value, tangible and otherwise, inhering to the automatic water heating load which are difficult of evaluation. One pertinent factor we have noted is that it not only builds good will, from the splendid service it renders day in and day out, but almost invariably a space heating installation will be sold with or immediately after sale of the water heater.

In our several contacts with various members of the Pacific Coast Gas Association we have discussed competition from electric water heaters at considerable length to gain some idea of their problem.

Admittedly, the efficiency of an electric heating element is high, since there are no losses inciden to combustion, and we might assume for the sake of comparison, that the heat transfer from an electric heating element is perfect and there are, therefore, no losses of any description. Based upon the foregoing premises, we find it will require 205 kw. hrs. of electric energy to replace each M c.f. of 1000 B.t.u. natural gas or 20.5 kw. hrs. per therm in an automatic water heater.

In Fig. 1 is shown a graph of equal operating costs of gas versus electric water heaters with various costs for the respective services and various heating values of gas.

In making our study of the comparative economics involved, operating costs include not only the cost of the heat input, but amortization of the respective investments based upon a life of 60 months with interest at 6 per cent per annum. In this connection it should be noted that amortization is as much a part of the operating costs as any other element entering therein. Figuring amortization at 1.93 per cent per month, based upon an estimated life of 60 months with interest at 6 per cent per annum, we have a fixed charge of $1.74 per month for the electric water heater and $1.16 per month for the gas-fired water heater. This difference of $0.58 per month in fixed charges accounts for the fact that electric energy could be given away at no cost to the consumer, and 1100 B.t.u. gas could sell for 28c per M c.f. to show the same over-all cost of operation as an electric water heater in similar service.

With an analysis of the comparative economics, it is obvious there is but one solution to the problem in so far as the gas industry is concerned. We are going to have to get out and toot our own horn, do a real selling job based upon cold facts and realities rather than mystery and glamour; and we are not yet convinced that the gas industry cannot and will not do it.

Gas Refrigeration As a Load Builder in the Mass Market

(Continued from Page 14)

didn't push the gas refrigerator, who in blazes would? Others, similarly placed, must have made the same decision for the chart, Fig. 1, shows how the percentage of gas refrigerators to total sales has been steadily growing—a tribute also to the excellent promotional plans of the manufacturer and the local support they have received from the A.G.A. and companies in the field.

It does not necessarily follow that the "have-nots" are the most careful buyers, but, as a rule, they have a greater appreciation of values. The durability of the gas refrigerator is a special asset in appealing to the mass market. But, as we all know, the other fellows are no slouches at singing the praises of their products, and unfortunately, the "masses" are apt to be influenced by noise rather than logic. (How else can you account for the spectacular successes of some of our alleged "statesmen"?) Accordingly, it is the reputation we won yesterday and are earning today in our "class" markets that will be the biggest single factor we can obtain in swinging the "mass" market tomorrow to gas refrigeration, when the means to buy have been obtained.

The ice box is doomed. The replacement of it with a gas refrigerator is largely in the hands of the gas industry.

■ ■

P.C.G.A.'s Annual Employe Contest To Begin Soon

"Do you know your Certified Performance Gas Range?" is the question around which the annual Pacific Coast Gas Association employe contest is built this year. The contest, open to all employes of member companies, is sponsored by Harrison Musgrave's Educational Committee. Details will be announced soon by Ludlow Shonnard, Jr., coast contest director.

Prizes will be $50 for the winner, major prizes for the 12 next highest contestants, and fifty $2 drawing prizes.

Employe contests have been held annually by the P.C.G.A. since 1924. San Diego Consolidated Gas and Electric Co. has won more of the contests than any other company, and the Spokane Gas and Fuel Co. holds second place.

■ ■

Resort Area Seeks Gas

Extension of natural gas service to approximately 1500 homes in the Lake Arrowhead area, mountain summer resort above San Bernardino, Calif., is planned by Southern California Gas Co. Applications are now being taken and construction of pipe lines will start as soon as sufficient applicants sign up to justify the extension.

Effect of Pulsating Flow on Gas Measurement

• S. R. BEITLER, Ohio State University, Columbus, Ohio, in a paper, "The Effect of Pulsating Flow on Gas Measurement," presented before the Southwestern Gas Measurement Short Course, in Norman, Okla., April 20, 1939. (Abstract by G A S.)

IN 1936, the United Fuel Gas Co. and the Ohio Fuel Gas Co. decided almost simultaneously to attempt to determine the effect of pulsations on some of their measurements. Since these companies are both subsidiaries of the Columbus Gas and Electric Co., J. E. Overbeck, who is measurement engineer for the Columbus Engineering Corp., was asked to assist on both projects, and he asked the writer to participate in analyzing the problem.

The test setups were made, the United Fuel Gas Co. making one at their Kenova Compressor Station near Kenova, W. Va., and the Ohio Fuel Gas Co. making one at the Brown Compressor Station near Mt. Vernon, Ohio. After some of the results of the tests at these stations were made and analyzed, it was felt that some data should be secured with a simpler setup and a thesis was arranged, under the direction of the writer, at the Ohio State University. All of these test plants were constructed early in 1937, and investigations have been continued on them ever since that time, though these investigations have not been continuous. While no positive and general results as to methods of eliminating errors have been found, the results have been very helpful in showing many things which had not previously been known about the errors of pulsation.

Test Stations

The use of the different test stations made it possible to test the effect of different conditions, since the three compressor arrangements were quite different in many respects. The general arrangement at all test stations was approximately the same. There were two orifice plates in series in a bypass line between the suction and discharge headers of the compressors. These orifices were connected up with the proper gages so that they could be used to meter the gas or air flowing. The test line was arranged so that it was possible to have pulsationless flow through either one or both of the meters. This was done by installing throttling orifices between the source of pulsation and the meter, the throttling orifice being of such a size that the flow through it was above the critical velocity. With this arrangement it was possible to check the orifices against each other with steady flow conditions, and then to make the same check with one meter subject to pulsations and the other with smooth flow. The pulsations could come either from the outlet of the orifice (from the suction of the compressor or compressors) or from the inlet of the orifice (from the compressor discharge). Since the two meters were measuring the same fluid, a comparison of the indicated flow determined the effect of the pulsations. The method of first checking the two orifice meters against each other on smooth flow eliminated the chance for error due to differences in meters. In calculating the flow through the meters for comparison, all factors used in calculating flow accurately were used.

At the Kenova Compressor Station the suction pressure averaged about 100 lbs. per sq. in. and the discharge pressure about 325 lbs. per sq. in. The test piping was so arranged that it was connected directly to the discharge header so that it discharged into the suction in either of two ways — directly or through a wet type gas scrubber. The test line was made of 4-in. pipe and the meter runs were made up according to the recommendations of the Gas Measurement Committee of the American Gas Association. Orifices of from 0.25 in. to 2.50 in. in diameter were used in the tests.

The Brown Compressor Station suction pressure varied from 25 to 50 lbs. per sq. in. gage and the discharge pressure from 150 to 190 lbs. per sq. in. The gas for the test run was taken from the discharge line of one of the 160-hp. compressors, just before it entered the station discharge header, and was discharged directly into the suction header. Pipe runs and orifices were of the same general design as were those at Kenova.

In Robinson Laboratory at Ohio State University the test line was the direct discharge of a 12-in. and 7.5-in. by 9-in. two-stage double-acting compressor running at 300 r.p.m., and the second meter discharged directly into the atmosphere. The test line was 3 in. in diameter and arranged as were the others, except that throat taps were used for the pressure connections. To date only a 1.5-in. orifice has been used in this line.

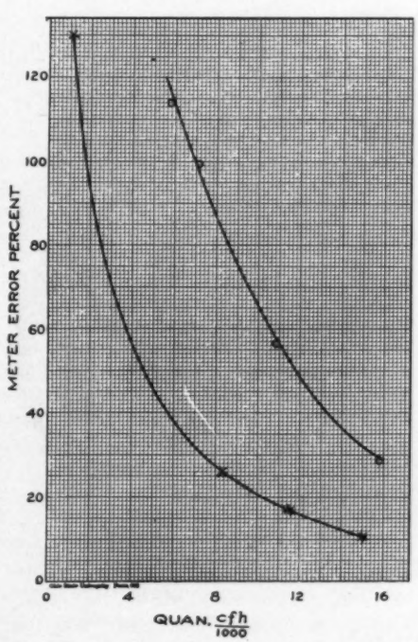


FIG. 1. Variation of error due to pulsation with quantity flowing (1½-in. plates, 3- and 4-in. lines). (Legend: o = Brown Station; x = O. S. U.)

Meter Error Variation

The first thing determined was the variation of meter error with rate of flow. This was done only at Brown and Ohio State and only with 1.50-in. orifice so the results are rather incomplete, but they indicate the direction and seriousness of this error. The curve sheet Fig. 1 shows the error plotted against the rate of flow for the two orifices tested. It will be noted that there is a very large increase in the error as the rate of flow through the meter decreases. This decrease in error is about inversely proportional to the fourth power of the flow. However, the error is not the same at any time for the two installations.

The next thing determined was the effect of changing the diameter ratio of the orifice, keeping the differential head constant. Fig. 2 is a plot of the results of some tests at both Brown and Kenova at different times. It will be seen that the error decreases as the diameter ratio increases in all cases. However, there is no similarity between any of the curves, and all errors have different absolute values even when the tests were taken at the same station and under the same conditions, as nearly as the conditions could be controlled. It is probable that different compressors were running and the

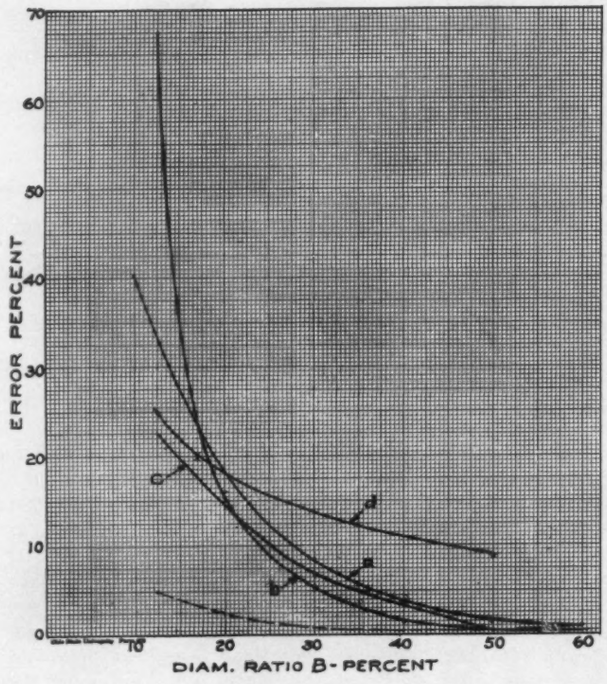


FIG. 2. Variation of error due to pulsation with diameter ratio.

change in pulsation waves, due to this, would make the difference in error.

It will probably be necessary, before the investigation is ended, to make some tests in which the complete discharge from a compressor station is piped through a test line to determine the effect of this type of flow. However, a great deal of valuable information can be secured by using the apparatus at the University where the complete discharge of the compressor can be sent through the test line, and where conditions can be controlled within the limits of the pressures available.

The question as to the effect of frequency and amplitude of the pulsations is not answered by the tests made to date, for two reasons: (1) the lack of any device to accurately and easily indicate these values, and (2) it was impossible to control them in the tests reported above.

An Unanswered Question

One question which has often been raised, and which has not as yet been answered, is the one as to whether or not pulsations on the outlet of the meter (this is the type in metering the gas flowing to a compressor) would have the same effect as do those on the inlet. A series of tests at Kenova was made to determine the effect of suction pulsations on the meter. The results for these tests for different diameter ratios are shown in Fig. 2, as the dotted curve. It will be noticed that this curve has approximately the same shape as have the others in Fig. 2 except for the fact that the end of the curve for the higher ratios seems to be turning up.

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This, however, is based on the results of the tests of one orifice only and does not prove that the curve has this shape.

It will be noticed that the absolute errors for this curve are much less than the others in Fig. 2. This may be accounted for by several things. First, the nature of the pulsation is different, due to the fact that the valves of the compressor are open full stroke on the suction stroke while they are open a portion of the discharge stroke, and this creates much different wave form. Then the differential head on the orifice was somewhat greater during these tests, though the mass flow was about the same, and there is always the possibility of different conditions in the line, due to differences in operating conditions in the station. Some of these will be acting in all cases, however, and it is predicted that the errors on the suction side of compressors will be less than on the discharge side.

One discrepancy which appeared in the series of tests with the pulsations originating on the outlet of the orifice was the fact that the errors were positive and the dead-end reading of the differential gage (i.e., the reading when the inlet valve to the meter was closed so that there was no flow) was above zero. At several other stations in which observations had been made of this phenomenon, the dead-end reading was below zero.

All of the tests described so far had to do with orifice meters with flange taps. Another question which was raised was whether or not the effect on pipe tap meters would be the same. This question was answered by a series of tests, the results of which are plotted on Fig. 3, as the dotted curve. It will be seen that the results of these tests are practically the same as the results plotted as the solid curve on this sheet, which was made using the flange taps at the same time and under the same conditions at Kenova. This shows that for the same mass flow and the same pulsation conditions the effect is the same on either type of taps.

Various pulsation measuring devices have been developed, some of which are described in the attached bibliography. Mr. Overbeck and the writer, in 1935, designed the indicator shown in Fig. 4. In this pulsation indicating device the gas pressure tank was connected to the meter run line through a ½-in. line in which is placed an orifice plate, the diameter of the orifice being ⅛ in. The 10-in. manometer shown in the photograph was then piped up so as to measure the pressure drop across the ⅛-in. orifice. It has been known that an orifice subject to pulsations will show a differential pressure when there is no flow. This device takes advantage of this fact, and the reading of the manometer is an indication of the presence of pulsations. In use, this instrument has been fairly satisfactory as an indicator of the presence of pulsations, but no way has been found to calibrate it to indicate the amplitude. It must be used and watched rather carefully, as rapid changes in the static pressure will force the liquid out of the manometer, and slight changes of static pressure will cause instantaneous readings on the manometer which are not caused by pulsations. If the instrument is carefully used it makes a very good indicator and, in connection with some of the earlier tests at both Brown and Kenova, this pulsation indicator was

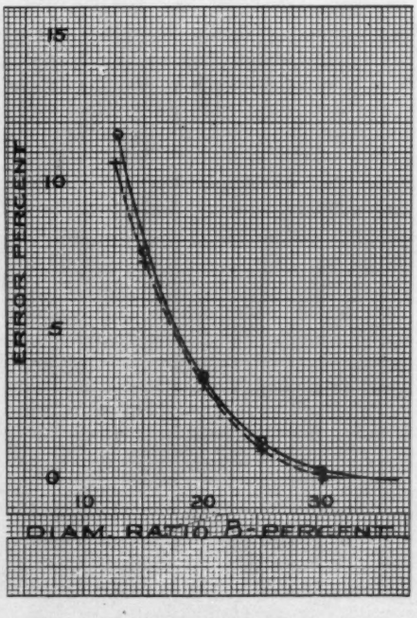

FIG. 3. Variation of error due to pulsation with diameter ratio. (Legend: o = flange taps; x = pipe taps.)

used. It was found in all cases that when the indicator showed no deflection, no error was indicated. However, there were times when the indicator showed pulsation and there was no error. This is a sure indicator of zero error.

BIBLIOGRAPHY

"Effects of Pulsation on Flow of Gases," by Professor Horace Judd and Donal B. Pheley, in *Transactions*, A.S.M.E., Vol. 44, 1922, p. 853, No. 1869.
"The Laws of Similarity for Orifice and Nozzle Flows," by John L. Hodgson, in *Proceedings* of the A.S.M.E., 1928, FSP-51-42.
"Eliminating Pulsation Errors in Orifice Meter Measurement," by T. K. M. Smith, *Western Gas*, January, 1932.
"Survey of Metering of Pulsating Flows of Gas," by Howard S. Bean, *Western Gas*, October, 1935.
"The Detection and Mitigation of Pulsation in Orifice Meters," by T. K. M. Smith and R. E. Morter, *G A S*, September, 1938.

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A Colorimetric Method For Measuring Odorant Content

(Continued from Page 24)

one and one-half milligrams of copper oleate, and 3 cu. ft. of gas would require $0.45 \times 3 \times 3 = 4.05$ milligrams of copper oleate.

The coloring produced by 10 milligrams of copper oleate uniformly distributed on a 3-in. filter paper and the brown discoloration by the Pentalarm contained in 3 cu. ft. of gas odorized to the extent of 1 lb. per million cu. ft. provides a range of colors which may be easily used for the purposes of comparison. This color range may be used to measure Pentalarm concentrations of widely varying proportions by causing smaller or larger measured quantities of gas to pass through the sensitized filter paper.

The principal advantage of this development as far as gas distributing companies are concerned is the fact that it provides an accurate and permanent record of odorization that is independent of the odor sensibilities of any individual or group of individuals.

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Bristol, Tenn., Will Change to Natural Gas Service

The State Railroad and Public Utilities Commission has approved the application of the East Tennessee Light and Power Co. for permission to substitute natural gas for the manufactured gas with which that company has been serving residents of Bristol, Tenn.

The application indicated no change in rates, but it is expected that the greater thermal content of natural gas will save consumers $21,000 per year.

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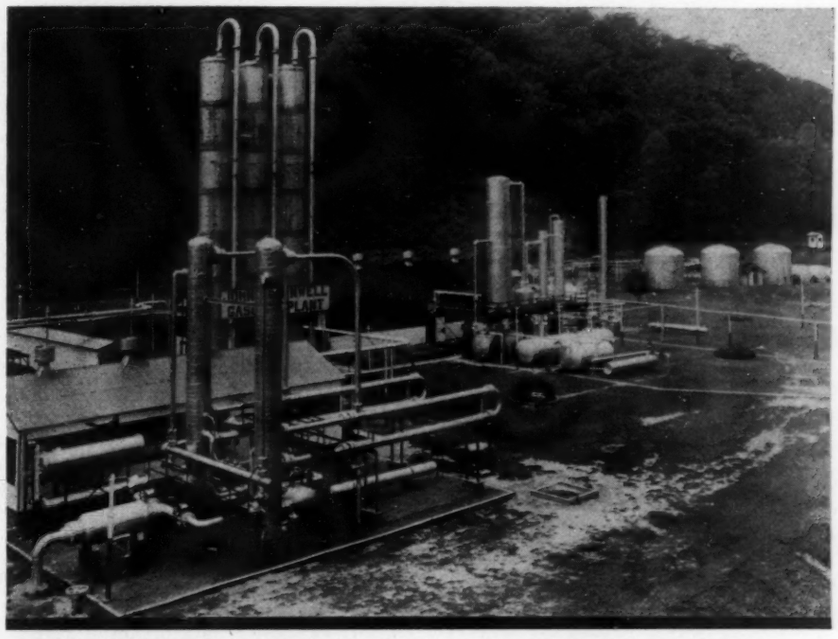
Harrisburg Co. Elects Craig

Robert Hall Craig, consulting engineer and editor of *American Engineer*, has been elected a director of the Harrisburg (Pa.) Gas Co. Mr. Craig, a graduate of Pennsylvania State College, has been associated with public utilities for several years.



The Hope Natural Gas Company's 1000-lb. dehydration plant at Clarksburg, West Virginia.

The Effect of Dehydration On Pipe Line Capacity

• JOHN CLARK, Hope Natural Gas Co., Clarksburg, W. Va., in a paper, "Dehydration and Resultant Effects on Pipe Line Carrying Capacity and Operation," presented before the Natural Gas Transmission Conference at the Annual Convention of the Natural Gas Section, American Gas Association, Mayo Hotel, Tulsa, Okla., May 8, 1939.—(Abstract by G A S.)

AFTER the severe winter of 1936, the Hope Natural Gas Co. felt that additional line capacity was required from a newly developed field in southern West Virginia to central plant, about 95 miles north at Hastings, and from there 100 miles north to a point in the Ohio delivery system. First thought was a 20-in. line, operating at 350 to 400 lbs., discharging into a 100-lb. suction line at Hastings, and then being repumped for delivery into Ohio. However, this seemed to be a logical place to try out the idea of high pressure, and the saving in first cost justified us in going ahead and adopting this idea.

The final decision was to lay the first 95 miles, and discharge ahead of Hastings at 325 lbs. gage with 1000-lb. compressors at the south end, and later lay the remaining 105 miles, and install another stage of compression to raise the pressure to 1300 lbs. gage. The pipe selected was 12-in. inside diameter seamless steel pipe, grade B with .32 per cent carbon, and an ultimate strength of 65,000 lbs. With this pipe it was considered safe to use a safety factor of three, and this gave a safe working pressure slightly over 1300 lbs. The question of joints was the next serious problem, and it was finally decided that a solid welded line was the only safe solution, and expansion would have to be taken care of by the frequent bends required by the rough terrain. Later on, during construction, it was found that the line averaged 63 bends per mile, and there have been no expansion troubles to date, which justified this decision.

The next problem encountered was that in this country there are frequent records of gas temperatures as low as 30°, and at the proposed pressures, freezing would be a serious problem, and dehydration down to a dew point of 20°, at least, seemed required. In 1936, the formation of hydrates had just begun to be studied, and there were very few plants built at that time. Also, this plant had to be very flexible, as at first it would have to dry gas at 1000 lbs. and 62° down to a 20° dew point, but after the last stage of compression was added on the outlet side of the dehydration plant, it would have to dry gas to a 20° dew point at 1300 lbs., which is equivalent to a dew point

TABLE NO. 1—SUMMARY OF COSTS OF CATHODIC CORROSION PROTECTION EQUIPMENT

Type of Station	Number of Stations	Av. V.A. Output per Station	Av. Cost of each Installation	Annual Cost: Maintenance and Power	Annual Cost: Per V. A. Output	Annual Cost: Per D. C. Kva hr. Output	Annual Power Cost: Per D. C. V. A. Output	Annual Power Cost: Per D. C. Kva hr. Output	Overall Efficiency of Installation Kva hr. output / Kw hr. input
Windmill*	23		$1695.13	$289.85					
Batteries	2	235	296.00	236.50	$251.50	$28.70			
Tungar	6	124.6	339.00	222.24	1.78	.20	$0.92	$0.11	29.9%
Copper Oxide	1	181.54	1328.00	723.55	3.98	.45	.55	.06	34.0%
Motor Generator	3	559.6	1379.25	663.84	1.19	.14	.28	.03	44.7%
Rexselen	8	51.75	310.00	182.73	3.53	.40	.92	.11	51.0%
Rexselen	1	174.00	789.00	195.29	1.006	.12	.47	.053	53.7%

*Due to the fact that the average volt-ampere output is difficult to obtain on windmill generator installations, no cost per volt-ampere can be given for comparison with other types of installations.

of 8° at 1000 lbs. So the final choice was a plant circulating, through contact towers, a concentrated solution of calcium chloride in water, which by its hygroscopic action gave a 20° depression of the dew point, and then by refrigeration this solution was chilled to 30°, giving a gas temperature of 40° and a dew point of 20°. By suitable heat exchangers between the incoming and outgoing gas, this cold was recovered, and the refrigeration cut to one-third that required without heat exchange. For refrigeration both ammonia, propane and butane were studied, but ammonia was finally selected because of its lower operating cost. This plant has been operating now for three years with no trouble at all but minor mechanical difficulties, and last winter its average operating cost, without interest or depreciation, was 1.16 mills per M c.f. when treating an average of 45 million cu. ft. per day. A general view is shown in Fig. 1.

Flexibility Shown

To show its flexibility, the plant was operated the first two winters with an oil absorption gasoline plant on the suction side of the compressors to remove the gasoline. In 1938, the feasibility of shutting the absorption plant down was studied and, as a result, another 40-ton ammonia machine was added to the plant. With this, brine temperatures were reduced to 0° F. and the gas chilled to 10°, resulting in the removal of as high as 3500 gals. of gasoline per day and allowing the entire savings of the cost of operating the absorption plant, with the only added cost that of running one 60-hp. engine.

Since this plant was built, other methods have been developed and there seems to be a particular field for each design. The first improvement was the adding to the calcium chloride solution of about 20 per cent glycerine, which increased the dew point depression to about 30°, and in most cases obviated the necessity of refrigeration. The most radical change was the substitution for the calcium chloride solution of a mixture of di-ethylene-glycol and water, which, by its very low vapor tension, produced a dew point depression of about 40°, and in any normal case eliminated all necessity for chilling. Later it was found practical where the gas was sour to add to the solution other chemicals which would absorb the hydrogen-sulphide; thus, in one plant, remove both sulphur and water.

As the situation now stands, where a gasoline plant is already in operation or sulphur removal is a problem, the glycol or glycerine plant will likely work out the cheapest in both first and operating costs. However, where a new installation is contemplated, the flexibility of the calcium chloride plant with refrigeration, and the practicability of combining dehydration and gasoline removal in one plant gives this design advantages worthy of serious consideration.

Due to its tightness and absence of any water, this has made a very excellent test line, and it has been possible to duplicate tests made a year apart to a fraction of one per cent. Soon after the line was put in service, a complete series of tests of carrying capacity was run, which tests have been checked several times since. From these tests it has been found that, due to the super-compressibility of the gas at these high pressures, flows much in excess of those expected from the Weymouth formula were obtained. A super-compressibility testing machine was used, and from its results curves were drawn showing super-compressibility through the entire range of pressure of various gases, both wet and dry, as well as of pure methane and ethane, at usual temperatures and up to 2000 lbs. pressure. From these data it is evident that within about two per cent the flows obtained were equal to those given by the Weymouth formula, multiplied by the super-compressibility of the gas used, at the average pressure on the line. This average pressure is given by the formula:

$$P_{average} = \frac{2/3\,(P_1 + P_2 - P_1 P_2)}{P_1 + P_2}$$

As an example, using an average dry gas with an average pressure of 300 lbs., the increased flow was six per cent; at 500 lbs., 11 per cent; at 800 lbs., 18 per cent; and at 1000 lbs., 24 per cent. Above this pressure the present equipment does not allow the making of any tests.

This equation gives sufficiently accurate results for ordinary designing and checking, but for a final check, C. C. Reed of Hope Natural Gas Co. has developed, from the basic gas laws, a formula which seems to check the test results almost exactly.

This formula is:

$$Q = Cd^{2}/^{3}\left[\frac{a(P_1^2 - P_2^2) + 4/3b(P_1^3 - P_2^3) + 3/2c\,(P_1^4 - P_2^4)}{L}\right]^{1/2}$$

All of these quantities are the same as given for the Weymouth formula in Monograph No. 6 of the Bureau of Mines, except the constants a, b and c. These are obtained by substituting values from the super-compressibility-pressure curve of the gas used, in the formula:

$$K = a + bP + cP^2,$$

where K is the super-compressibility as determined by test, in gas state formula PVK = RT. In this, "a" is, for all practical purposes, unity.

In conclusion, after three years' experience with this type of design, it is

felt that the most economical line, especially for long distances, is the one using quite high pressures, well above 1000 lbs., to stress the steel to its maximum safe limit, and get the maximum advantage of super-compressibility and dehydrated to five degrees below the lowest temperatures expected in operation, so that the carrying capacity will be maintained continuously at its original efficiency.

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Two 24-In. Loop Lines Will Augment Detroit Gas Supply

THE Michigan Gas Transmission Corp. of Detroit announces that construction was to start about June 1 on approximately 15 miles of 24-in. gas line to increase the facilities of the company in serving its Indiana and Detroit markets.

The construction will be in two loops paralleling the present 20-in. line in Indiana, the first one starting at the point where connection is made with the Panhandle Eastern Pipe Line Co.'s property at the Illinois-Indiana state line and extend to the Montezuma Compressor station, or a little more than 10 miles. In this loop will occur an additional crossing of the Wabash river, a distance of nearly one mile, with two 16-in. lines. The second loop will start at nearly 17 miles east of Montezuma station, at the east header of the present Raccoon creek river crossing, and extend eastward for almost six miles.

The pipe will be supplied by the National Tube Co., and the construction will be a combination of welded and coupled line. Couplings will be furnished by the Dresser Manufacturing Co. The contract for construction work has been awarded to W. S. Bibb, Valley Park, Mo., and is expected to require six weeks to complete.

■ ■

P.G.&E. Names Cunningham Sacramento Valley Manager

Allen B. Cunningham has been appointed manager of the Sacramento valley system of the Pacific Gas and Electric Co., with headquarters at Marysville, Calif. He succeeds Joe Sauer, who was transferred to the management of the North Bay division gas department.

Mr. Cunningham is taking direction of his division just at the time when his company is engaged in a large expansion program in the territory surrounding Marysville, through which the new Buttes natural gas is being served Colusa, Chico, Gridley, Yuba City, Biggs and Marysville. It is expected that in the near future Lincoln and Wheatland will also be included.

The franchise to lay gas mains in Biggs was granted on April 10.

■ ■

California Co. Plans Office

Purchase of property on Colorado boulevard in Eagle Rock, Los Angeles suburban community, was announced by Southern California Gas company in May. It is understood plans are now being drawn for the construction of a modern office building for the district, work to be completed by November 1.

Comparing Equipment Costs In Cathodic Protection

THE comparative costs of cathodic corrosion protection equipment listed in Table No. 1 are calculated from the records contributed by six pipe-owning utilities and, although the results could be modified to some extent by a change in design of some of the equipment, they serve to show the comparative annual costs of the various types of units under actual operating conditions.

When the proper field and accounting records are available the annual cost of electrical protection, at a given installation, can be obtained by adding the annual costs of the following:

1. Maintenance cost per year: (a) inspection, cleaning, minor adjustments; (b) renewal of parts and shop work.
2. Operating cost per year: (a) power consumption.
3. Annuities for ultimate replacement of parts: (a) housing, transformers, switches, etc.; (b) generators or rectifier elements; (c) ground electrodes.
4. Interest charges on investment and taxes on investment per year.

Cathodic protection installations can be conveniently grouped under two headings:

1. Those having no electric power system available.
2. Those for which electric power is available from an electric transmission or distribution system.

Under Group 1 will be found windmill-driven direct current generators, gas engines, and batteries.

Under Group 2 will be found motor generator sets, tungar rectifiers, copper oxide rectifiers (Rectox, Cuprox), and selenium rectifiers (Rexselen).

In order to arrive at comparative figures, average values are used whenever a company operated more than one unit of a particular type of cathodic protection equipment. Since accounting records did not separate the various items in detail, the labor charges have been distributed between the various parts of the equipment as equitably as experience indicated proper.

Wherever possible, the various types of equipment have been compared on a volt-ampere output basis rather than on current output alone. This eliminates the effect of different types and resistances of ground beds.

Volt-amperes or V. A. are used in the calculations, particularly on the rectified current circuit as this unit has been adopted by most manufacturers in place of watt output in rating rectifier units for chemical or plating work.

On a rectified current circuit a wattmeter will indicate approximately 23 per cent greater output than is indicated by the product of the voltmeter and ampere meter readings.

The overall efficiencies in this paper are understood to be the volt-ampere output divided by the watt input of the corrosion eliminator station.

• **W. R. SCHNEIDER, Pacific Gas and Electric Co., San Francisco, Calif., in a paper, "Comparative Costs of Cathodic Corrosion Protection Equipment," presented before the Spring Technical Conference of Pacific Coast Gas Association, Los Angeles, Calif., March 23-24, 1939. — (Abstract by G A S.)**

CALENDAR

June

American Home Economics Association Convention—Gunther Hotel, San Antonio, Texas, June 19-22.

Canadian Gas Association—32nd Annual Convention, Royal Connaught Hotel, Hamilton, Ontario, June 6-7.

Empire State Gas & Electric Association Group Meeting—Tower Club, Park Central Hotel, New York City, June 9.

Michigan Gas Association — Annual Convention, Grand Hotel, Mackinac Island, Mich., June 29, 30, July 1.

Natural Gas and Petroleum Association of Canada Convention—General Brock Hotel, Niagara Falls, Ont., June 1-2.

Northwest Conference, P.C.G.A.—Seattle, Wash., June 22-23.

Public Utility Advertising Association—Annual Convention, New York City, June 18-22.

August

A. G. A. Home Service Conference—Chapman Park Hotel, Los Angeles, August 22-26.

American Dietetic Association—Ambassador Hotel, Los Angeles, August 28-31.

Appalachian Gas Measurement Short Course—University of W. Va., Morgantown, W. Va., August 21-23.

National Association of Railroad and Utilities Commissioners—Seattle, Wash., August 23-25.

September

Gas Industry Day—Golden Gate Exposition, San Francisco, September 9.

Pacific Coast Gas Association—46th Annual Convention, Fairmont Hotel, San Francisco, Calif., week of September 4.

October

American Gas Association—21st Annual Convention, New York City, October 9-12.

Gas Industry Day—New York World's Fair, October 9.

National Metal Congress and Exposition—Chicago, October 23.

National Safety Council—Atlantic City, N. J., October 16-20.

The Sales Possibilities of Natural Gas Engines

• D. W. REEVES, Oklahoma Natural Gas Co., Tulsa, Okla., in a paper, "Economics and Sales Possibilities of Gas Engines," presented before the Industrial Gas Sales Conference at the Annual Convention of the Natural Gas Section, American Gas Association, Mayo Hotel, Tulsa, Okla., May 8, 1939.—(Abstract by GAS.)

THE field of application for gas engines is wide and varied, and is constantly changing with the constantly changing competitive picture, but it is an established fact that there has always been a large diversified field for gas engines and that one will always remain. Experience has shown that one of the best fields of application will be found among commercial and industrial establishments for electric power generation and for mechanical drives. The load factor of such establishments will average from 30 to 50 per cent on an annual basis. Taking the lower figure of 30 per cent annual load factor, each horsepower of gas engine load connected will operate the equivalent of 2500 hours at full load annually. Using the conservative figure of 10 cu. ft. of 1040 B.t.u. gas per horsepower hour as a basis, then each horsepower hour connected will use at least 25,000 cu. ft. annually. If we take a figure of 25c per M c.f., this means a revenue of $6.25 per horsepower connected per year.

A Distributed Load

Gas engine business is a load that is evenly distributed over every day of the year and can be sold at a very satisfactory rate. As for the market, experience has shown that there are a large number of medium size commercial and industrial establishments requiring power at a cost of $75 to $400 per month. These establishments offer a most attractive field for gas engines. In addition, there are the specialized pumping installations such as irrigation which has been developed in several sections; sand plants; dairies and produce plants; air conditioning loads, and a number of others which could be mentioned. Gas engines for direct connection to compressors for air conditioning offer a most attractive field. It is a load that comes during the period of lowest demand on the gas utility's system and is one which we should certainly develop to the utmost.

If it is agreed that the gas engine business is attractive load, then the customer's point of view can be examined and discussed.

A little less than two years ago the Oklahoma Natural Gas Co. decided to install four small generating plants in four of its district offices to determine to its own satisfaction just what could be done with a small generating plant. These plants were installed in district offices normally paying power bills of less than $100 each per month. At the time, the Lycoming people were just beginning to become very active in the territory, and after giving consideration to their unit and to the work they were doing in promoting gas engine load, it was decided to install four of their 10-kw. units. The average cost of the units installed, including all necessary wiring, was $1876 each. The first cost of the units was in line with that which any customer could obtain. In fact, they were installed under more unfavorable arrangements than many customers would face.

During the first 12 months' operation these four units generated a total of 111,500 kw. hrs. at an operating expense of $2251. This compared with a purchased power cost of $4257 based on the available electric rate. This was a decrease of $2006 in operating expense. This decrease in operating expense will pay out the total investment of $7506 for the four units in something like 3.75 years. Looking at the installations on the basis of monthly cost, the power bill would have averaged $89 as compared with an average of $47 for operating expense on each unit. This is a reduction in operating expense of $42 per month per unit. From still another angle, the decrease in operating expense is a gross return of 26.8 per cent on the investment. This is certainly more than adequate to take care of insurance, taxes, depreciation and return on the investment, even if the depreciation allowance is as liberal as competitors claim it should be.

In the above installations, the loads were about as small as would ordinarily be considered. Operating expenses were based on the actual measured consumption at 45c per M c.f., oil was purchased at retail prices, and all repairs were made by the Lycoming distributor and billed at their regular rates. Stand-by service from the power companies was also maintained and is included in the operating expense at the regular rate charged by the power companies. In other words, any customer on the Oklahoma Natural lines could equal the results obtained by the company, and most of them could better these materially.

In making these tests we kept in mind that the customer was interested in the additional time, effort and worry required by a gas engine installation, and the only thing which the district office employes did was to start the units each morning. A time clock stopped the units automatically. When an oil change or additional oil was required they called a filling station. If any adjustments or repairs were required they called the distributor. There was no additional worry for district office employes. Experience has proved that the gas engine will save money when properly installed and used, and that arrangements can be made so that there is no additional time, effort or worry entailed insofar as the operation of the units is concerned. The operation of the units was turned over to others, services were paid for at the current rate, and a substantial saving in power costs was shown.

Savings To Be Made

Other installations checked indicate that as great or greater relative savings in operating expense can be made by nearly all normal industrial and commercial establishments that are paying from $75 to $400 per month for purchased power. Below the figure of $75 per month for power, a gas engine installation, except in rare instances, will not be justified and above $400 per month the business is a more competitive one. Every sort of prime mover and all possible combinations and sources of power are advanced as the solution to the problem. Numbers of studies which we have made indicate that most of the installations in the class mentioned—that is, whose power bills run from $75 to $400 per month—will pay out in from two to five years. Numerous checks which we have made on installations in our territory indicate that these estimates are in line.

It has been gratifying to find an increasing number of customers extending the use of gas engines to other operations after a satisfactory installation. Sales possibilities are only limited by the sales activities of the manufacturers and the gas utilities. The field and the prospects are waiting. The need is for a sales program that will enable the manufacturers and the utility to capitalize on the existing sales possibilities.

Such a sales program must certainly include: (1) provision for good engineering; (2) provision for intelligent service through selection of prospects or by developing service organizations.

The Oklahoma Natural Gas Co. has definitely adopted the policy that gas engines shall only be sold under conditions that will assure successful operation and satisfaction to the customer.

Service is most important. Some gas companies have developed service organizations with excellent results. However, it is believed that most companies will have to develop outside agencies. In many instances customers can be picked and proper service assured through the customer's own organization. Sometimes it is possible to interest others in providing service at reasonable cost. Some pretty good gas engine service facilities have been developed through garages. Where power generation is involved, garage mechanics cooperating with electricians have worked very satisfactorily in some instances.

Service Facilities

It has been found that service facilities will develop as the number of gas engine installations increase. If service facilities are provided for the individual installations as they are sold, it is expected that servicing agencies will develop and relieve gas companies of this difficulty. The main point is to be sure that the sales program provides for satisfactory service on the engines sold. How it is provided is the individual company's problem, but it must be provided if we develop our gas engine business.

Any plan that will enable gas engines to be purchased on time payments will reduce sales resistance and produce sales. It gives the added inducement of the so-called "pay-out-of-savings" plan. The third point is then to provide the best finance plan that can be developed for the particular territory.

It takes a good salesman to get the order. Remember this when selecting men to place in the field. Use engineers, but realize that comparatively few engineers are good salesmen.

So to a sales program that provides:

1. Good Engineering.
2. Good Service.
3. Good Financing.

A fourth and final plank is added, one that will, if the first three are satisfactorily provided, determine the degree of success to be obtained:

4. A sound merchandising plan and a good sales personnel.

A.G.A.E.M. Annual Meeting Draws 200 Attendance

APPROXIMATELY 200 executives of manufacturing companies from all parts of the country and Canada convened May 24, 25 and 26 at the Roosevelt Hotel in New York City for the annual meeting of the Association of Gas Appliance and Equipment Manufacturers. Lucian L. Kahn, Estate Stove Co., of Hamilton, Ohio, was chairman of the program committee.

E. R. GUYER

The delegates were officially welcomed to the convention by Nicholas J. Kelly, chief engineer of Light and Power, Department of Water Supply, Gas and Electricity, City of New York. Greeting the visitors on behalf of Mayor LaGuardia, Mr. Kelly stated that the World's Fair Corp. had selected gas for heating its buildings and individual concessionaires were using gas on a large scale for cooking, refrigeration, water heating, and industrial process work, thus indicating confidence in gas equipment for the conditions of "tomorrow's world." Mr. Kelly pointed out that while there were more than 1,000,000 gas ranges in service in New York City, and one-fifth of the 1,510,000 gas refrigerators in the nation were in that city, there were comparatively few automatic water and house heaters, and that in those two fields was the greatest potential domestic market for gas appliances.

E. R. Guyer, Chicago, president of the A.G.A.E.M., presided over the opening session. In urging the expansion of advertising and promotional activities during the year, Mr. Guyer stated: "To keep gas appliances before the public, sales promotion and advertising must be continued and expanded to insure precipitation into the minds of the consumer so that the words 'gas appliance' and 'modernity' will become synonymous." He also stressed the need for a sustained public relations' research and statistical program for the industry.

In the same opening general session C. W. Berghorn, managing director, A.G.A.E.M., reported that the Association now had a membership of 350 manufacturers of gas appliances, accessories and equipment from all parts of the country.

R. S. Agee, sales promotion manager of the Domestic Gas Range Division, A.G.A.E.M., spoke on "Opening Our Eyes and Closing Our Sales."

George E. Frazer, Chicago, counsel for the Association, in his address the second day of the convention said that gas appliance manufacturers "are in the full stream of governmental regulation." Naming more than eight specific legislative acts enforced by about as many governmental agencies which tie the hands of manufacturers in their production of appliances, Mr. Frazer disclosed that this regulation is increasing in intensity.

A plea for modification of the nation's tax structure in order to encourage investment of new capital was made by George V. McLaughlin, president of the Brooklyn Trust Co., Brooklyn, N. Y. "Taxes which discourage the investment of new capital should be repealed and other taxes substituted," said Mr. McLaughlin.

Senator H. Styles Bridges, of New Hampshire, in an address May 25, advocated the repeal or revision of the capital gains tax and the excess profits tax.

Closing Session

In the closing session of the convention held in the Court of Flame theatre of the Gas Industries Exhibit at the New York World's Fair, May 26, Saul Cohn, president of the National Retail Dry Goods Association, urged the industry to participate in more extensive national promotion, and to cooperate with the retailer, stating that it would "stimulate the marketing of gas appliances if the utility companies, the producers, and retailers pull together and tell the story to the customer at the same time." Mr. Cohn urged the creation and stimulation of a "wide market at home for American products."

Hugh H. Cuthrell, president of Gas Exhibits, Inc., also speaking at the Court of Flame theatre, urged unified national action, and stated, "We have made a fine start by uniting to present an exhibit to the public here at the Fair."

The sessions were brought to a close with a tour of the displays in the Court of Flame exhibit group by the delegates, their wives, and other guests.

Laboratory Experiments on Transport of Gas Main Dust

AN INCREASE in the amount and types of gas burning equipment, a larger number of pilot lights, a multitude of automatic gas control devices as well as the policy of rendering free appliance adjustment service make gas main dust a serious problem to the distribution engineer.

It is well known that dust troubles are greatly aggravated during the season of high gas velocities. It is only natural, therefore, that in studying the dust problem attention should be focused on gas velocities, and an attempt made to determine the velocity necessary to transport a certain size dust particle. The literature does not contain much data of this nature, and with the exception of the work of Corfield and Wallace*, the data do not apply strictly to utility distribution conditions. A study of this work indicated the need for data covering wider ranges of particle size and gas pressures.

Apparatus Described

The apparatus was similar to that used for the previous work; it consisted essentially of a 6-ft. length of 1.7-in. inside diameter pyrex glass tube into which the dust sample could be conveniently placed and observed. The flow through this tube was measured with a meter connected to a pilot loaded regulator. Pressure was measured with a test gage at the outlet of the tube ahead of a gas cock used for the control of the gas velocity. Air hose was used for the inlet and outlet connections of the tube to reduce the transmission of vibration. All but a 20-in. length of the tube was enclosed within a 2-in. pipe, this length being covered by a shatterproof glass shield. A low and a high power magnifying glass were used for the observation of the smaller dust sizes. A "dust spoon" was made by splitting axially a 5/8-in. brass tube about 18 in. long to form a semi-circular trough onto which the dust sample could be poured. The filled spoon then could be inserted into the glass tube and inverted, the dust falling to the bottom in a uniform pile.

In this report dust sizes are described by two numbers, the first designates the screen number through which the dust had passed, the second is the next smaller screen number on which the dust had been retained; thus a 30-40 dust is one which had passed through a No. 30 screen, but had been retained on the next smaller size, No. 40. By microscopic examination it had been determined that all of the particles were at least three per cent smaller than the aperture of the screen through which they had passed. In this work, all data are plotted against the largest dust size, thus a 30-40 value would be plotted approximately three per cent less than the observed aperture of a No. 30 screen.

As a preliminary, the motion of dust at transport had to be carefully defined. It was agreed that transport existed between two limits of velocity; one was arbitrarily established at a velocity so low that no observer could possibly have called it transport even though very slight motion was evident: the other was chosen at a velocity high enough to give motion that would eventually result in complete removal of the dust. Transport velocity was defined as the average of the high and low velocities as determined by this method. This criterion was adopted and, with various refinements, became a very satisfactory one.

The results of these tests are shown in Fig. 1, which indicates the relation between particle size and velocity of gas at transport for various gas pressures. At their lower limits these results are in accordance with previous work on this subject; with larger dust particles the observed velocities are higher.

These data find an application in a number of transmission and distribution problems, of which the following are typical:

In the blowing of gas lines, if the pressure and velocity of gas at any point in a line are known, the largest dust particle which may be transported there can be determined; when installing equipment in gas lines for removing dust, selection can be made more intelligently by the use of the curves to determine what size particles will be encountered.

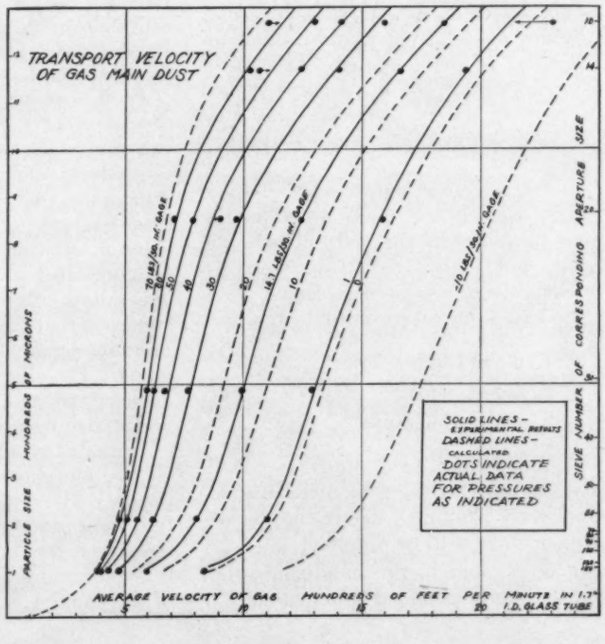
TRANSPORT VELOCITY OF GAS MAIN DUST
PARTICLE SIZE HUNDREDS OF MICRONS
SIEVE NUMBER OF CORRESPONDING APERTURE SIZE
SOLID LINES - EXPERIMENTAL RESULTS
DASHED LINES - CALCULATED
DOTS INDICATE ACTUAL DATA FOR PRESSURES AS INDICATED
AVERAGE VELOCITY OF GAS HUNDREDS OF FEET PER MINUTE IN 1.7" I.D. GLASS TUBE

FIG. 1. Transport velocity of gas main dust.

*Wallace, T. G., and Corfield, Guy, *Western Gas*, Vol. II, No. 1, 8 (1935).

• **RUDOLPH G. HOLMAN and NORMAN L. HOFF, Southern California Gas Co., Los Angeles, Calif., in a paper, "Laboratory Experiments on the Transport of Gas Main Dust," presented before the Spring Technical Conference of the Pacific Coast Gas Association, Los Angeles, Calif., March 23 and 24, 1939.—(Abstract by G A S).**

CP Seal is Registered Trade Mark in Canada

The CP seal, which identifies CP gas ranges, is now a registered trade mark in Canada as well as in the United States, it has been announced by C. W. Berghorn, managing director of the Association of Gas Appliance and Equipment Manufacturers. Twenty-six manufacturers are now licensed to produce and market these ranges which bear the CP insignia guaranteeing rigid "certified performance" features.

New Coast Counties Office

The Coast Gas and Electric Co. in Brawley, Calif., has completed its move into new quarters in the Masonic building. Of special interest to personnel and customers alike is the modern gas-fired, forced-air heating and cooling equipment, according to District Manager E. B. Mason, Jr.

Stanley Jenks Leaves GAS; Joins Illuminating Group

STANLEY JENKS, New York editor of *GAS* since March 15, 1938, has resigned to join the staff of the Welsbach Street Illuminating Co., Philadelphia, Pa., where he will be located. Morse DellPlain, chairman, executive committee of the Welsbach company, has announced that the appointment was effective May 15.

The Welsbach Street Illuminating Co. owns and operates, among others, the Kitson Co., Ozone Processes, Inc., Welsbach Street Lighting Co. of America, and the Welsbach Traffic Signal Co.

Mr. Jenks has been prominent in the gas industry for many years, having been sales manager of the Northern Indiana Public Service Co., eastern manager for Bastian-Morley Co., and active in the commercial activities of the American Gas Association. He has also had wide experience in the journalistic profession, being at one time a member of the staff of the London *Times*.

William C. Copp, formerly associated with the American Institute of Physics, New York City, has been added to the staff of *GAS* Magazine as eastern manager, with offices in New York City.

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So. Counties Starts Work On Eight Gas Holders

Work on foundations for a new series of high pressure gas storage holders for Southern Counties Gas Co.'s Santa Monica Bay district was begun in May. Eight 500,000-cu. ft. capacity units, together with gas engine driven compressor equipment, will be installed at a cost approximating $400,000. Net storage capacity of the district will be brought to 8,500,000 cu. ft. with the addition of this new storage equipment. The eight holders will be of the horizontal type, measuring 32 ft. in diameter by 215 ft. in length including the hemispherical heads. They will be welded and riveted, and designed for 50 lbs. working pressure.

■ ■

G. F. B. Owens Advanced By Brooklyn Union Gas

George F. B. Owens, formerly manager of the new business department, has been elected an assistant vice-president of the Brooklyn Union Gas Co., Brooklyn, N. Y.

Other advances within the organization include: Walter E. Bolte, manager, new business department; Frank B. Herty, manager, industrial and commercial divisions; Williard C. Wolff, domestic sales manager; Leonard F. Genz, supervisor of wholesale sales, and Gebhard C. Beck, gas utilization engineer.

■ ■

Wilson Named Head of New Refrigeration Committee

Roy P. Wilson, Philadelphia Gas Works Co., has been appointed chairman of a new Commercial Refrigeration Committee organized by the Industrial Gas Section of the A.G.A. The committee will study a number of test installations of direct-fired absorption units, analyzing them from the aspect of both performance and economy, and will report its findings at the 1939 convention of the A.G.A.

Building the Small Utility With Bottled Gas Service

By CHARLES G. GRAU

Manager, Oneida Gas Company, Rhinelander, Wisconsin

THE gas industry's competitors—oil, gasoline and electricity—are continually working on its customers for their cooking, water heating and refrigeration load, and, in many instances, gas operators have stood by and let competitors gradually take load away without putting up much of a fight. The time has come when the gas industry must fight back to not only hold present load but to increase it.

C. G. GRAU

Those who have been fighting electric competition, no doubt, have found that it has started from without and worked in. By this I mean that electric cookery has usually been introduced in the surrounding rural district and gradually worked to the point where the campaign came right into gas-serviced territory.

With the gas industry, especially in the northern climates, the laying of mains and services has been a seasonal proposition and confined to the summer months when digging and laying of pipe was an easy job.

How often has a gas company had the opportunity of getting a new service connection in the winter months and stalled around trying to put it off until Spring when it would be easier work. The outcome has been that the customer simply went to a competitor who promised and gave immediate service. This just meant another customer lost with no chance of getting them back until the range they purchased had worn out.

Here is just the place where the question of bottle gas fits into the picture for one can step out, no matter what the weather conditions are, and give a customer gas service immediately by the installation of a single or double drum bottle gas system. In the Spring when weather conditions are better, it is an easy matter to change the customer over to city gas. The customer has been saved; he has been rendered a prompt, efficient service; he has been sold gas appliances, and additional load has been created.

If the prospective customer lives beyond the gas mains, the same plan can be used by installing a single drum system until such time as there are sufficient customers to warrant the placing of a main.

Thus, by using bottled gas the gas industry can reverse the order and work from the inside and out into competitive territory, and the surprising part is the acceptability of gas over other fuels.

Our company's plan at first was to handle bottled gas for the protection of our load in the city limits, but we began getting calls from the rural districts so decided to work the outside territory. In the city the bottled gas was sold on a meter basis but beyond our city limits the usual price was charged per cylinder as listed by other bottled gas dealers.

Our experience has shown that the average prospect would rather deal with the Gas Company than with what I term the curbstone broker who sells from a catalog and has no merchandise to display or who is not in a position to give gas company service.

We did not get started with bottle gas until about June 15th, 1937, when our salesman began working the territory surrounding our city and the results were most gratifying. In six months we made about 40 installations beyond our gas mains.

Selling beyond the gas mains can be looked at from two advantageous viewpoints: First, the company has a new gas customer who also has purchased new appliances thus showing a present and a future profit. Second, should this customer ever move into the territory where your company is supplying "city gas" he naturally will become your customer and continue using your products.

■ ■

Ottumwa Gas Co. Starts Expansion Program

Involving an expenditure of $45,000 and a three months' working schedule the Ottumwa Gas Co., Ottumwa, Iowa, started in May to lay 200,000 ft. of underground high pressure gas mains to carry natural gas into the outlying sections of the town.

All mains will be of steel welded pipe, replacing the former low pressure system used when the company was serving manufactured gas.

Among those present at the Indiana Gas meeting (seated, left to right): H. W. Thornburg, association secretary-treasurer; P. A. McLeod, president; Dean H. Mitchell, retiring president; Thomas J. Kelly, H. G. Horstman and I. C. Shepard. (Standing): Roy S. Brunner, H. V. Armstrong, C. M. Cullison, E. G. Peabody, C. W. Goris, L. B. Schiesz, C. V. Sorenson, G. M. Johnson, L. B. Smith, L. C. Heavner, Thomas L. Kemp, R. N. Zeek.

McLeod Named President Of Indiana Gas Association

FIVE hundred leaders of the militant gas industry in Indiana — the industry providing gas for cooking to a dominating majority of Hoosier homes — are back at work after one of the most successful conventions in the history of the Indiana Gas Association, according to word received from Donald D. Hoover, Northern Indiana Public Service Co., Hammond. The convention was held in May at Fort Wayne, a city in which the gas company serves more than 24,000 of the 27,000 homes with gas.

Paul A. McLeod, New Castle, division manager of the Public Service Co. of Indiana, was elected president of the association, succeeding Dean H. Mitchell, president of the host company, Northern Indiana Public Service Co. Other officers and new directors elected were H. V. Armstrong, president of the Indiana Gas Utilities Co. at Terre Haute, vice-president; H. W. Thornburg, local manager of the Central Indiana Gas Co. at Anderson, secretary-treasurer; and F. B. Culley, president, Southern Indiana Gas and Electric Co. at Evansville. E. D. Anderson, vice-president, Northern Indiana Public Service Co. at Hammond; Guy Henry, president, Central Indiana Gas Co. at Muncie, and Dean T. Burns, assistant manager, Citizens Gas and Coke Utility at Indianapolis, were named directors.

With a convention theme of "Gas for the 4 Big Jobs," the men and women attending the convention were greeted by a barrage of gas advertising. In the convention hall and scattered all over the city were billboards on gas ranges, water heating, refrigeration and "Let Gas Do the 4 Big Jobs." A rotogravure full-page advertisement pointed out the increasing number of All-Gas Homes, and a number of the visitors inspected a home-building project in which 21 out of 23 newly-constructed homes were all-gas.

In addition to single and double pages featuring dealer advertisements in the association's semi-annual statewide gas range month activity, the Maytime gas range campaign was emphasized by uniform window displays designed by the association and appearing throughout the downtown section in the windows of leading dealers. Newspaper advertising on CP ranges also appeared in both of the daily newspapers each day during the convention.

The highpoint of the convention was the president's address, in which Mr. Mitchell asserted that ahead of the industry lies the challenge to discover, through research, methods of providing gas at constantly lowering cost to the customer and, through advertising and a well-informed personnel, to tell the complete story of the "4 big jobs" and the decreasing cost to the customer as he adds new appliances.

After pointing out that the total number of customers using gas increased last year, as did the usage per customer, Mr. Mitchell mentioned the state-wide gas range activity as "one way in which we can meet the challenge of fully acquainting the public with the superiority of gas as the economical, fast, flexible fuel."

"Summarizing the lessons we have learned," he said, "I would say that we in the industry know that gas is the best, the ideal fuel, but the public is not fully informed about this established fact. The gas industry will lose its business to competition only if it sits idly by, fails to tell its story, and is content with the present upward trend in our business. If we merchandise our service properly, we need have no fear of results. . . . We now are supplying gas to a practically saturated cooking market, in a country fast approaching a stationary population. It is obvious that future expansion must be through the medium of the other three of the four big jobs."

Other speakers on the program were R. S. Agee, sales promotion manager of the A.G.A.E.M., New York City; J. Raymond Schutz, president of the Standard Life Insurance Co. of Indiana, Indianapolis; George S. Jones, Jr., vice president and general sales manager of Servel, Inc., Evansville; A. A. Potter, dean of the school of engineering, Purdue University; Eric A. Nicol, assistant director of employe relations, The Peoples Gas Light and Coke Co., Chicago; R. Earl Peters, state director, Federal Housing Administration, Indianapolis; C. O. Mattingly, attorney-examiner of the Public Service Commission of Indiana; Harry G. Hogan, president of the Dime Trust and Savings Bank, Fort Wayne, and E. G. Peabody, Citizens Gas and Coke Utility, Indianapolis.

■ ■

Oklahoma Natural Conducts Newspapermen's Contest

The Oklahoma Natural Gas Co., Tulsa, is conducting a statewide prize competition among Oklahoma newspaper editors. Two prizes totaling $350 will be awarded for the best answer from anyone connected in a regular capacity with an Oklahoma newspaper, to the question, "Where ahead lies Oklahoma's greatest opportunity, and how can we attain it?" The contest closes Dec. 31.

■ ■

Sacher Replaces Corrigan In Sapulpa, Okla., Office

C. Harry Sacher has been named manager of the Oklahoma Natural Gas Co.'s office in Sapulpa, Okla., taking the place of Stephen E. Corrigan who held that position since 1933, and who recently resigned.

Mr. Sacher has been with the company for 12 years, during which time he has been located in Enid, Tulsa and Oklahoma City, respectively.

■ ■

Torbert Named To Civic Post

Jack Torbert, new business manager of the Wyandotte County Gas Co., Kansas City, Kan., has been elected president of the Chamber of Commerce in that city.

Managers Named For United Gas Corp.'s New Divisions

J. V. STRANGE, vice-president of the United Gas Corp., Houston, Texas, has announced the appointment of H. P. Carroll, formerly operating manager, as the general superintendent in charge of operations for the three newly-created Louisiana-Mississippi, East Texas, and West Texas divisions.

In charge of the three new divisions are: M. A. Voorhies, superintendent of Louisiana-Mississippi; W. B. Currey, superintendent of East Texas; and W. R. Briggs, superintendent of West Texas.

Other personnel changes announced by Mr. Strange were: A. D. Kerr, district manager of the Marshall district; E. M. Cannon, district manager, New Iberia district; R. S. Collings, district manager, Crowley district; R. A. Metzke, district manager of New Braunfels district; and J. C. Dezelle, district manager of Schulenburg district.

Dean A. Strickland, general sales manager of United Gas Corp., has announced the appointment of R. C. Anderson as residential sales manager; J. A. Wilson as industrial and governmental sales manager at Houston; T. E. Hawkins as advertising and sales promotion manager; and A. B. Banowski, formerly in charge of commercial, industrial, and government sales, has been assigned to the development of new business in the commercial market.

■ ■

Ann Arbor, Mich., To Have Natural Gas By Early Fall

The Michigan Public Service Commission has recently granted the Michigan Consolidated Gas Co. permission to serve Ann Arbor, Mich., with gas from the Texas Panhandle, according to news reports. The change-over is expected to be made within 90 days.

The gas will be brought from the Texas fields through the pipe line now serving Detroit by tapping that line at a point about 10 miles east of Milan. Construction of this 21-mile connecting pipe line from Milan to Ann Arbor was to have been started in May and will cost an estimated $128,000.

■ ■

Pacific Gas and Electric Co. Makes Rate Reduction

The Pacific Gas and Electric Company has recently announced a reduction in natural gas rates amounting to $1,000,000 per year, effective August 1. The reduction is being made as a result of studies and investigations by the California Railroad Commission. This is the third gas rate cut effected by the Pacific Gas and Electric Co. since January, 1936.

■ ■

Wisconsin Utilities Ass'n Reelects Former Officers

In the annual mail ballot of the Wisconsin Utilities Association incumbent officers were reelected for the fiscal term beginning May 1. The officers are: president, Bruno Rahn, Milwaukee Gas Light Co.; vice-president, A. P. Gale, Wisconsin Power and Light Co.; treasurer, John Dockendorf, Wisconsin Electric Power Co.

Mrs. Amanda Green (right), played by Gertrude Payne, and Mrs. Marjorie Martin (left), played by Albertine Berry, enter a gas cooking contest in the picture, "Never So Embarrassed." Mrs. Green choses an outmoded stove, old-fashioned roaster and huge pans for her vegetables. Mrs. Martin selects a modern CP range, up-to-date cooking utensils, and uses modern cookery methods. Needless to say who wins the contest.

Lone Star Movie Plays to 1500 Employes, Customers

IN LESS than one month after its premiere showing, the latest Lone Star Gas System movie, "Never So Embarrassed," was shown to more than 1500 employes and customers at 12 separate meetings. The movie, produced for educational work in promoting modern gas cookery, features the CP range, and following one showing before an employe group, 21 employes modernized their kitchens with 1939 CP ranges.

The picture tells the story of two friends, both modern young housewives. One, however, has an old-fashioned kitchen and the other a strictly modern one. The young women enter a gas cooking contest, each selects a range "like the one at home." The result is that the contestant selecting the old-fashioned range is quickly outdistanced by the other contestant and goes home in tears, thoroughly embarrassed.

Little comfort is given by her husband, who reminds her that the old range "still lights" and is therefore "good enough for them." In desperation she appeals to her friend and together they plot to reform him by preparing a delicious broiler meal on the latter's modern gas range. The dinner impresses the stubborn husband, but he completely capitulates when their friend receives, by messenger, the $100 first prize for the contest. Matching the contest check, the reformed husband writes one out to "A Reliable Gas Appliance Dealer" and presents it to his wife for purchase of a new gas range.

Fadeout shows the couple admiring their new gas range.

Copies of the movie "Never So Embarrassed" are available and information concerning them may be obtained by writing the advertising department, Lone Star Gas System, 1915 Wood Street, Dallas, Texas.

■ ■

Lone Star Plans 17-Mile Line To Sanatorium

E. L. Buelow, division manager of the Community Natural Gas Co., a branch of the Lone Star Gas System, has announced the survey of a new 6-in., 17-mile, high-pressure, welded gas line from San Angelo, Texas, to Sanatorium, where will be served the State Tuberculosis Sanatorium and nearby Carlsbad. It is expected gas will be turned in the mains by midsummer.

The new line will take off from the 12-in. line that brings sweet gas to San Angelo from Coleman county, 90 miles away.

■ ■

Roland, Okla., to Have Gas

A franchise to serve natural gas to the community of Roland, Okla., has been granted by a special city election to the Southwestern States Gas Co., Fort Smith, Ark. Approximately 50 consumers will be served. The gas will be obtained from a nearby field owned by the Western Oklahoma Gas Co., Fort Smith.

Gas-fired Doughnut Machine For the Small Operator

By HARRY W. SMITH, JR.

Director, Industrial Publicity, A.G.A.

THERE are doughnut machines and doughnut machines, but a new gas-fired "baby" model just introduced by Peerless Brands, Inc., Philadelphia, Pa., earns headlines for two reasons:

1. It is the first automatic, continuous unit which cooks a doughnut on both sides at once by keeping it submerged in fat throughout the whole process — thereby, according to the manufacturer, cutting the cooking time to 58 per cent of the usual two minutes.
2. It is the first gas-fired machine in a size small enough to bring the economies and quality of automatic, continuous doughnut making to the smaller baker, coffee shop, restaurant, or chain store. Its capacity is 35 dozen per hour — it can be started and stopped at will — and with it, claims its maker, anyone can turn out superior goods at an overall cost of seven cents per dozen doughnuts, including batter, fuel, fat, operation, and amortization of cost of equipment.

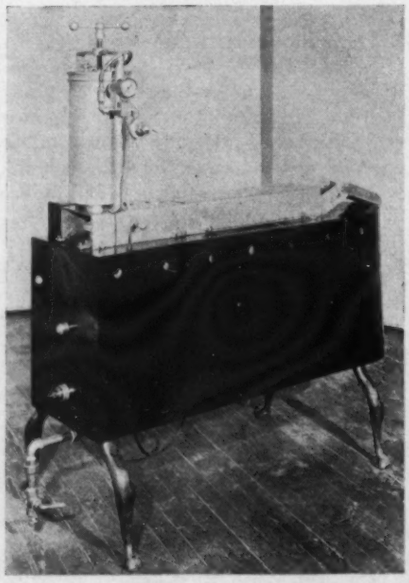
To the retailer or restaurateur who now has to buy his doughnuts or who makes them by the laborious means of hand-cutting and manual deep fat frying — but still doesn't have a large enough trade to warrant the smallest sizes of the standard factory-production doughnut machines — the Peerless appliance should be a boon. It weighs only 200 lbs., measures less than 4 ft. in length, and is stylish and mysterious enough to be a top-notch crowd-collector when operated behind a window-front. Fig. 1 shows a general view of the device.

In principle it is simple. The deep fat is kept at the correct temperature (365° to 375° F.) by an Eclipse atmospheric gas pipe-burner controlled by a standard Robertshaw thermostat. The gas burner consumption is approximately 12,000 B.t.u. per hour. An overflow drain keeps the fat level from rising too high, and a convenient tray just under the top hoop takes solid fat and slowly melts it down to feed the main fat tank and compensate for the gradual fat loss. Batter is supplied to the vertical cylindrical pressure tank at one end of the machine. It is loaded in 2½-quart batches — enough to make 16 dozen doughnuts of average size and last for 25 to 30 minutes of continuous operation.

The doughnut itself is formed in a cutter of the reciprocating sleeve type, located at the bottom of the batter tank. Batter is kept flowing down into this unit at the right rate by air pressure exerted above the charge. The air pump and air pressure regulator are of the standard variety used on beer barrels behind any bar. Adjustment of the amount of dough in each doughnut is made by regulation of the air pressure forcing the batter into the cutter. It has been found that adjustment to pressures of 3 to 5 lbs. per sq. in. is usually about right.

As the doughnut drops from the cutter its fall carries it below the hot fat level where it slides forward to be caught beneath an endless metal belt (completely submerged in the fat) as it tends to rise. The doughnut never rises to the top again until it is done — and by that time it has been carried to the discharge end of the machine. Here it is picked up — this time from underneath — by another belt which slants up to the outlet chute and permits ample time of travel for complete fat drainage from the finished product.

An interesting point is that the air pump, the automatic cutter, and all the sprockets and endless metal belts are driven from the same one-third-horsepower double-shaft motor. Such simplicity of design makes for foolproof and trouble-free operation. No attention to the machine is necessary other than to load batter every half-hour, and take away the completed product periodically.



The baby gas-fired doughnut machine weighs but 200 pounds, is only four feet long.

Tests have shown that a Peerless doughnut is in the fat only 1 minute 10 seconds. In other machines — floatation units requiring the turning of the doughnut in the middle of its course — dough must be in the cooking bath at least two minutes. This new principle of submerged automatic cooking makes for obvious gains in speed, economy, and compactness.

■ ■

So. Counties Co. Transfers L. H. Geldert and R. F. Gibbs

Walter L. H. Geldert, who for the past 12 years has been commercial agent for the Southern Counties Gas Co. (Los Angeles) Pomona district has been transferred recently to Santa Ana to act as commercial agent for the Orange County district, according to Clyde H. Potter, commercial manager.

Mr. Geldert succeeds Lorin G. Moore who has been in charge of the company's local sales activities for several years and who recently resigned.

Robert F. Gibbs, who has been a member of the sales staff at Fullerton for the past 10 years, has been transferred to the Pomona office to succeed Mr. Geldert.

■ ■

War Cronies Meet Again at Natural Gas Convention

Four members of the 85th Observation Squadron of World War forces met for the first time since 1918 at the annual convention of the Natural Gas section of the A.G.A. in May at Tulsa, Okla. They were L. S. Allen, National Tank Co., Tulsa; Kenneth C. Tomlinson, American Meter Co., San Francisco; Steven Day, Barrett Manufacturing Co., Dallas, and Swede Lundquist, Iverson Tool Co., Tulsa.

The four had last parted at Toul, France, at the close of the war.

■ ■

Connecticut Co. Announces Changes In Personnel

R. H. Knowlton, formerly vice-president of the Connecticut Light and Power Co., Hartford, Conn., has been advanced to executive vice-president by the board of directors. The board also promoted William T. Jebb from assistant superintendent to manager of the company's Waterbury division.

Charles J. Allen was named to fill the newly-created position of director of public relations, and A. V. S. Lindsley was appointed vice-president in charge of sales.

■ ■

Northwest Section of P.C.G.A. To Meet in Seattle in June

The Northwest Conference of the Pacific Coast Gas Association will be held June 22 and 23 in Seattle, Wash. James F. Pollard, president, Seattle Gas Co., is chairman of the program and arrangements committee, it was announced recently by H. L. Farrar, president, P. C. G. A.

New Liquefied Gas Monthly Is Published by GAS

THE first issue of BUTANE-PROPANE *News*, a new monthly magazine directed to the liquefied petroleum gas industry and published by Western Business Papers, Inc., publishers of *GAS*, made its appearance on June first, when over 2500 copies of the 100-page book were mailed to dealers, manufacturers, and distributors in every section of the country.

BUTANE-PROPANE *News* will deal with all branches of the liquefied petroleum gas industry, including transportation and storage, safety practices, industrial and standby uses, bottled gas and semi-bulk distribution, dealer sales and service, new appliances and equipment, town-plant operation and load building, and application to internal combustion engines.

BUTANE-PROPANE *News* will convey to manufacturers, distributors and dealers the vital facts concerning the industry and will carry the news of its development.

Subscription rates are $2.50 for three years, with no one-year rate; the foreign subscription rate is $3.00 per year. Address BUTANE-PROPANE *News*, 810 South Spring St., Los Angeles, Calif.

■ ■

Cities Service Co. Forms Scholarship Foundation

In honor of Henry L. Doherty, president of the Cities Service Co. and its affiliated companies, the Henry L. Doherty Educational Foundation has been organized by employes of the various companies to provide scholarships for sons and daughters of those associated with this group of utilities. The funds for the scholarships are being made up of voluntary subscriptions by members of the organization.

Methods of selecting students for awards and the number of scholarships have not yet been determined by the board of trustees formed to administer the fund.

■ ■

New 42-Mile Pipe Line To Be Constructed in Michigan

The Northern Pipe Line Co. has let the contract for the construction of a 42-mile pipe line from the Arenac County, Mich., gas field to Midland, Mich. At Midland the line will join the Consumers Power Co.'s mains now served with gas from the Six Lakes and Broomfield pools.

The line, which will be a 6-in. welded gas line, is being constructed for the Northern Pipe Line Co. by H. L. Gentry Engineering Co. of Jackson, Mich. It is estimated the line will cost approximately $250,000, and will be completed around October 1.

■ ■

Heating Council Meets in "Court of Flame"

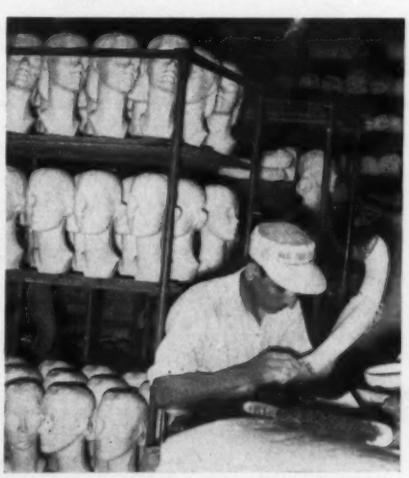
The Metropolitan Gas Heating and Air Conditioning Council held its May meeting at the "Court of Flame," the gas industry's exhibit at the New York World's Fair. The morning session was conducted by Stanley Finch, of the Brooklyn Union Gas Co., who is also the coordinator for the gas industry at the Fair.

Gas Heat Aids in Making Beautiful Clay Women

HUMAN figures with feet of clay are brought into being in Dallas by means of controlled gas heat, according to an article published in the *Blue Blaze News*, organ for the Lone Star Gas System. The successful manufacture of these glamorous, sophisticated mannequins depends extensively upon a dry, unvarying heat which is best maintained with natural gas, officials of the Standard Fixture Co. and Profita Mannequins, Inc., have found.

The reinforced composition figures dry best at a temperature of 85 to 90 degrees and natural gas served by Dallas Gas Co. provides this year around clean, dry atmosphere which enables the factory to work at maximum production levels. Dampness in the air during the rainy season might make a difference of two weeks in orders which, with properly controlled temperatures, can be filled in two days.

In the molding room a No. 125 Humphrey unit heater assures a 90-degree minimum temperature for drying plaster mannequins as they are removed from molds. The full-bodied figures are turned out in six units including legs and hips, head and bust, two arms and two hands, and each unit must dry thoroughly before being shellacked and sent to the second plant where the full figures are assembled as orders are filled.



Gas heat plays an important part in the manufacture of mannequins. Above, a view of the shop where the figures are assembled.

In a studio in the finishing department, original models from which the life-sized mannequins are finally cast, are done first in clay.

Clay used to hand mold the original model is stored in 1000 lb. quantities in the studio bathtub. It takes from 400 to 500 lbs. of clay to finish the original model of an adult mannequin and about 200 lbs. for a child's figure. A dry heat is important in this work also and a small vented radiant heater may be turned on during the hottest summer day if there is moisture or dust in the air. Windows of the studio are then tightly closed and the sculptress must suffer the heat for the sake of her art.

After a duplicate in clay is made of the original model as a means of correcting any defects, the master model or cast is made and the factory is ready for mass production on that particular figure.

Paint and glue must be properly dried and a special, gas heated room is used for the painting of lips, eyebrows, and eyes in typical college girl manner and for making the variety of wigs available for customers. A gas steam radiator heats this small finishing room where four girls are busy fashioning wigs of satin, ostrich feathers, linen crash and a variety of other fabrics. All of these are used in strips which are glued to the basic cloth cap which makes the wigs detachable and interchangeable with different figures. Wig stylists can complete only two wigs a day.

Original models are made according to measurements supplied by the U. S. Bureau of Standards, but to these exact measurements for each size, several inches in height, waist line, and shoulder lines are added. Reason for this is that plaster figures lack the flexibility of the human body and dresses will not cling and mold to them.

■ ■

Gas Service Extended

The Northern Utilities Co., of Riverton, Wyo., has granted petitions of residents of West Riverton, and has recently extended its gas mains to care for the additional demands.

SALES Slants

Getting Yourself in the Proper Frame of Mind

• **BEGINNING IN THIS ISSUE with "Getting Yourself in the Proper Frame of Mind," which appears on this page, GAS presents a series of articles to its SALES SLANTS readers. These will appear for the next several months, and might well be considered as chapters in a book entitled "Know Your Sales Fundamentals." They are not intended as a course of study. Nor do they aim to teach a new system of selling. Rather they are in the nature of a review. What they will seek to do, in a direct and unacademic manner, is to recall the principles on which the art of selling is based, in the belief that every salesman needs from time to time to get back to fundamentals in his thinking — fundamentals that remain the same no matter where applied, whether to toothpicks or telephone poles, hot water bottles or hot water systems. Comment, criticism, questions are invited.—EDITOR.**

LET'S take a concrete example: Salesman A and Salesman B are gas range salesmen. They work for the same firm and have an equal number of prospects. Salesman A has this slant: He doesn't believe in wasting his and the prospect's time showing something she can't afford to buy. Sometime fairly early in his sales presentation he asks the prospect point blank, "Now about how much are you prepared to pay for a gas range, madam?" Once he gets the proposition down to a price basis he is ready to do his selling job.

Salesman B, on the other hand, is in no great hurry to complete the deal. He wants first of all to determine what size and kind of gas range his prospect needs. He is not interested in how much the prospect is prepared to pay, believing that price is not an important consideration. His job, he believes, is to analyze his customer's wants, to fix the type and size gas range that would most perfectly meet her requirements, and to show her how she may secure that piece of equipment.

Now the question is, who is doing the better selling job? Who is doing the better thing by himself, his firm and his customers? Which of the two salesmen, A or B, has the proper frame of mind?

The answer, of course, is Salesman B. Salesman B has licked the first problem every salesman has to confront, that is the price problem. He has learned something many salesmen never seem to comprehend. To the person who thinks the job of selling consists merely in taking orders the declaration that price is no object sounds like the rankest sort of rubbish.

"Well, then," he will argue, "how does it happen that they have to call out police reserves to handle the mob at bargain sale counters?"

The fallacy in that line of reasoning should be fairly obvious. He is talking about price appeal. It doesn't take much more than an order book to give merchandise away at less than its standard value. Selling at sacrifice is not only a drain on the firm, it is a drain on the salesman's pocket book. No one ever got rich selling bargains, and no prospect ever was completely satisfied buying them.

A man, famous for his quickness of wit and infamous for his lack of scruples, is supposed to have summed up his sales philosophy in the aphorism, "Never give a sucker an even break." That point of view, somewhat modified perhaps, is not infrequently encountered in the sales world. It is the point of view we would find Salesman A accepting if we examined his mental attitude closely.

In letting his prospect buy the gas range that happened to fit her pocket book, what has Salesman A done? He has ignored the size of her family and the size of the meals she must cook on her new range. He has passed over the disadvantages she will encounter when she comes to use a piece of equipment which does not fulfill her requirements. He has made a quick commission in a quick and easy way; but he has made a dissatisfied customer and one who will not thank him for allowing her to purchase unsatisfactory merchandise.

If you could look into Salesman A's mind, you would probably find him saying to himself:

"Selling's just a racket anyway, a quick way to make easy money. If I didn't take this woman's money, she would go somewhere else to be plucked. Give 'em what they want. Don't argue with them."

That frame of mind is as dangerous and contemptible as the frame of mind the quack doctor gets into when he treats imaginary diseases. Salesmanship is a profession; it is as highly specialized and as important to modern welfare as the profession of law or medicine. It is a dignified profession, as far removed from horse trading, say, as the modern surgery is from the blood letting practiced by the barber during the middle ages.

The modern salesman has many functions. The least important of these is to sell something to someone. It is his job to analyze human needs, and to supply the thing that will satisfy those needs adequately. It is his job to create in the minds of his clients an appreciation of the benefits they will secure from the possession of the goods he handles.

Suppose we sum it up in this way: Selling is not a racket. Your prospect isn't a sucker with money from which he should be parted. Your prospect is a client. He has come to you for expert advice and service. It is your job to analyze his requirements and to recommend the type of equipment that most nearly meets them. You are not trying to outsmart him. You are not trying to sell him something he doesn't want for more than he wants to pay. You are trying to help him get something he needs.

Such is the proper frame of mind for the salesman.

The next chapter in this series will be the "Prospect's Frame of Mind."

■ ■

Oregon Appliance Society Sponsors Sales Campaign

As part of a gas range drive which will end June 12, the Oregon Gas Appliance Society sponsored a customer essay contest on the subject, "I would like to have a new CP gas range because—." First prize is a new CP gas range, and 20 additional prizes of merchandise orders of from $25 to $5 each will be awarded. Each person submitting an essay was presented a Pyrex measuring cup.

Other features of the gas sales compaign include a buying inducement of a 10 per cent discount on CP ranges selling from $119.50 or over and a contest between dealer salesmen, the winner of which will be given a trip to the Golden Gate Exposition.

Why Is a Sales Talk As Long As a Piece of String?

TO THE question, "How long should my sales presentation be?" a sales manager for a national merchandising organization poses a question of his own.

"How long is a piece of string?" he asks.

"Lincoln is supposed to have said," he continues, "that a man's legs should be long enough to touch the ground. Well, a sales presentation should be long enough to get a signed order.

"There are times when you can be brief. And there are other times when you have to go back even to points you have already covered. You are not finished until you have convinced your prospect that he needs what you have to sell and have persuaded him to buy.

"The trouble with too many salesmen is this: they are so eager to cover all the points of advantage possessed by their product they lose sight of the real purpose of their presentation,—which is to get a decision to buy. There is a classic story of a salesman who refused to be interrupted in his sales talk. When the prospect broke in with, 'I'll take it!' this salesman is supposed to have replied, 'No, no, wait a minute. I haven't finished with my story yet.'

"There is only one way to get a decision to buy: ask for it. Few prospects—if any—will ever say voluntarily that they would like to buy. You must ask for an order and keep on asking for it at proper intervals until you get the prospect's name on the dotted line.

"Here is a suggestion: Study your sales presentation and see how many spots there are where you can ask for an order. Every question the prospect asks should be taken as an indication he is ready to buy. Consequently when you answer a question ask your customer to sign the order.

"How long should a sales presentation be? Just long enough to wrap up your product and deliver it to the customer—or as long as a piece of string."

■ ■

Premium Dishwashers Given In Water Heater Campaign

A Sprayfoam Dishwasher was given to purchasers of gas water heaters by the Southern California and Southern Counties Gas Cos., Los Angeles, during their spring water heater campaign, February 27 to April 22. To qualify under the campaign rules, the water heater had to be A.G.A. approved, priced at $52.50 in 20-gal. size, used on company lines for domestic purposes, and entered in the campaign by the manufacturer. The cost of the premium dishwashers was shared by the dealer, manufacturer, and gas company.

■ ■

A.G.A. Issues CP Campaign Book For Summer Selling

The summer CP campaign book issued by the American Gas Association has been mailed to key executives in the gas industry and to 12,000 retail gas range dealers. On each of the book's 12 pages is a "Sell-a-Gram" message, similar to a telegram. On the covers are illustrations of the gas industry exhibits at the two World's Fairs.

A Double All-Gas Kitchen Display with Wide Appeal

MODEL kitchens form one of the best sales aids in the selling of gas ranges, gas refrigerators and even water heaters.

That is the conclusion of many sales and advertising men in the middle west, where one of the pioneers of this phase of demonstration in the smaller communities has been the Northern Indiana Public Service Co. This utility maintains complete model kitchen units, with appliances connected, in South Bend and Fort Wayne, both of which exceed 100,000 in population, and Hammond, trading center for a slightly larger group.

Even in smaller towns, some of them of only 2000 population, the company has installed kitchens which represent the latest improvements in beauty and usefulness as these are created by the foremost kitchen designers. The C.P. gas range, the latest model gas refrigerator, and an attractive water heater are worked into this scheme.

In some towns, these kitchens either form a part of a window display, being placed slightly above the showroom floor level, or are visible from the street. In others, as in the two shown in the illustration, they are inside the office building. Since as high as 90 percent of the company's customers pay their bills in person instead of by mail, kitchens draw hundreds of persons and give the home economics advisor or salesman an opportunity to tell the story of the All-Gas Home as well as to demonstrate how the various appliances work.

The kitchens shown below have proved highly successful from three

DOTTED LINE ROSCOE

"Congratulations, Roscoe. The Board has decided you're now a blue pin!"

Two all-gas model kitchen displays of the Northern Indiana Public Service Company. The adjoining kitchens were designed in two distinct types. At left is shown a kitchen which follows the cool lines of modern architecture. At right is seen a kitchen designed in the softer, daintier atmosphere of the Colonial motif.

points of view. First, they have "pulled" customers inside, where they ask questions. Second, they have stimulated sales, being credited incidentally with much of the success of public acceptance of the CP range, although this still is pioneering. Third, they have aided in emphasizing the modernity of gas. Too, they have helped the co-operating manufacturer of kitchen equipment sell his product and sold him on gas as an ideal fuel.

Since there were to be but two model kitchens, it was decided to design two distinctly different types, it was hoped that one or the other of the kitchens, at least in some respect, would be pleasing to every customer inspecting it. The point which was considered most important in the planning of both kitchens was to provide the gas range and refrigerator with a setting which would combine beauty and utility to the fullest degree. This is the only significant quality which these kitchens have in common.

One kitchen was designed to appeal to those who prefer today's modern styling in architecture; the other combines up-to-date lines and features with the softer, daintier atmosphere of the popular Colonial motif.

The modernistic kitchen has an unusual color treatment. The walls are done in a light powder blue. The soffit, or wall space from the cabinet tops to the ceiling, is a pale champagne, while the ceiling itself is in light ivory. Work surfaces and floor are covered with linoleum in harmonizing shades of blue. Ample cabinets are enameled in "pearl-glow," an off-white shade, and fitted with chromium and ivory bakelite hardware. Colored dishes, glassware, pottery and bric-a-brac bring cheerfulness and color to this kitchen. Bright, framed floral prints adorn the walls.

An interesting feature is the corner arrangement of the double-bowl white porcelain sink. The triangular window-ledge over the sink boasts a streamlined, chromium-trimmed aquarium flanked by potted plants.

It is but a step from refrigerator-to-sink-to-cabinet-to-range. This brings us to the "office" or meal planning area which is equipped with a built-in desk complete with radio and cradle-type phone, all in harmonious colors.

The kitchen referred to as the Colonial type could, perhaps, be more aptly termed "modernized Early American." While retaining the simplicity and charm of the Colonial period it affords the present day features which make this kitchen so easy to keep in order.

The walls are done in citron yellow, the soffit in deep old rose and the ceiling in light ivory. Most of the work surfaces, and all of the floor, are covered in delft blue linoleum. A piece of laminated maple has been built into one section of work surface to be used as a cutting board. The modernistic kitchen is similarly equipped. Cabinet doors and drawer fronts are natural golden maple of selected grain. The cabinets themselves are finished in ivory. The warmth of this combination strikes a note which is typically Early American. This "homey" feeling is further augmented by the criss-cross curtains with their blue star pattern and a singing canary in its ivory cage. Monel metal is used for the range top, sink unit, desk table top, and work surface moldings.

In both kitchens all work surfaces are well lighted. Sinks are placed under windows and general lighting is taken care of with two powerful flush-with-the-ceiling type fixtures in each room.

■ ■

Gas Utility Revenues Gain For First Quarter in 1939

MANUFACTURED and natural gas utility revenues amounted to $248,449,900 for the first three months of 1939, as compared with $232,750,800 for the corresponding period of 1938, an increase of 6.7 per cent, it was announced May 24 by Paul Ryan, chief statistician of the American Gas Association.

The manufactured gas industry reported revenues of $98,995,400 for the first quarter, an increase of 3.4 per cent from the same period of the preceding year. The natural gas utilities reported revenues of $149,454,500 or 9.1 per cent more than for the first three months of 1938.

Total sales of manufactured gas for the first quarter were 102,022,400,000 cu. ft., an increase of 5.3 per cent. Natural gas utility sales for the period amounted to 391,289,300,000 cu. ft., an increase of 9.9 per cent.

Manufactured gas sales for domestic uses were 0.7 per cent above the same period of 1938. Sales for house heating purposes gained 12.6 per cent, while commercial uses gained 5.5 per cent and industrial uses increased 13.4 per cent.

Natural gas sales for domestic purposes showed an increase of 10.7 per cent while industrial sales gained 9.0 per cent.

■ ■

United Gas Corp. Launches All-Gas Kitchen Campaign

A two-months, all-gas kitchen sales campaign has been launched by the United Gas Corp., of Houston, Texas, with the slogan, "Drive Dictator Drudgery from Modernia." "Modernia" is explained in the portfolios issued to employes, dealers and salesmen to be the territory served by United Gas Corp., which will free the housewife, Lady Moderne, from household drudgery by installing modern gas appliances.

To support the campaign the United Gas Corp. is publishing a series of newspaper advertisements, carrying out the theme of the campaign with the head, "Lady Moderne says—." All ads direct prospects to local dealers for further information.

R. A. GORDON

A. J. MALONEY

Maloney, Gordon Named To Washington Co. Sales Posts

J. BOOTHBY, vice-president and general manager of the Washington Gas Light Co., Washington, D. C., announced last month two major changes in the company's selling organization.

A. J. Maloney has been promoted from retail sales manager to the position of general sales manager, succeeding H. M. Brundage, recently resigned. R. A. Gordon, formerly general sales manager of the Blackstone Valley Gas and Electric Co., Pawtucket, R. I., has been appointed retail sales manager of the local gas company.

Mr. Maloney, reputedly one of the youngest sales executives in the gas industry, has had a rapid rise in the local gas company's sales department. Starting eight years ago as a field salesman, he has been successively supervisor of the range and water heater division, retail sales manager, assistant general sales manager, and now, general sales manager.

Mr. Gordon comes to the Washington Gas Light Co. with 22 years experience in the utility and appliance manufacturing business. He has served in executive capacities in the sales departments of gas and electric utilities in Illinois, Kentucky, Michigan and Rhode Island.

■ ■

Indianapolis Paper Carries Six-Page Gas Section

A six-page gas appliance section appeared in the morning edition of the Indianapolis (Ind.) *Star*, May 18. The section contained 6500 lines of gas appliance advertising, in addition to scores of news stories pertaining to gas and gas appliances, illustrated with photographs of appliances.

The idea of having a gas section was promoted by the Citizens Gas and Coke Utility. According to G. A. Saas, advertising manager, Citizens Gas and Coke Utility, this was the first gas appliance section to appear in an Indianapolis newspaper.

■ ■

Coquille, Ore., Gets Gas From Recently Discovered Wells

W. E. Marrion, Coast Oil Co., North Bend, Ore., recently brought in two natural gas wells across the valley from Fat Elk, Ore., and the gas is now being piped to the Coquille Gas & Power Co. plant for redistribution to the residents of Coquille. The natural gas will be furnished users at a saving in cost over the butane gas formerly supplied. The natural gas will be delivered for 25 cents per 1000 ft.

The two wells are 1250 and 1290 ft. deep, respectively. It is believed that the supply is sufficient for the needs of other surrounding towns, as well as for Coquille.

■ ■

E. H. Poe Recommends Study Courses for Employes

In an address on employe relations given before the Arkansas Utilities Association Convention at Hot Springs National Park, Arkansas, April 10-11, E. Holley Poe, secretary, Natural Gas Section of the A.G.A., stated that every employe had the opportunity to advance in his work by spending as little as three hours a week studying his job. He cited results of several employe courses given by gas companies, outlined in *Summary Educational Courses Given by Gas Companies*, by E. H. Poe.

Mr. Poe also stressed the employer's responsibility in eliminating fear and creating emotional stability which will result in the establishment of harmony between employer and employe.

■ ■

Construction of British Pipe Line System Started

Construction of an underground artery for the first gas grid system in Britain has been started in West Yorkshire by the United Kingdom Gas Corp. The cost of the project will be $1,062,000. Approximately 50 miles of 18-in. pipe line are to be laid, and it is expected that an additional 26 miles will be built later.

Some of the gas for the grid will be supplied by the Hemsworth and United Kingdom Coke Oven Co. from a coking plant now being built at a cost of $1,750,000.

■ ■

Gas For Breaux Bridge

A 25-year franchise to lay mains and furnish gas service to Breaux Bridge residents from the station of the United Gas Lines Co. has been granted by the city of Lafayette, La. Breaux Bridge lies in St. Martin parish.

Gas Used in Manufacture of Two New Explosives

TWO cheap, powerful high explosives, each as destructive as nitroglycerine, can now be made from natural gas, according to an announcement by the American Chemical Society in Baltimore April 2, on the eve of its 97th meeting. The discovery means, it is stated, that limitless quantities of high explosives can be made from air, natural gas and steam alone.

The discovery of a new chemical synthesis was made at Purdue University. It was reported by Professor Henry B. Hass, head of the University's chemistry department, which had the collaboration of the Hercules Powder Co., Wilmington, Del. This company has already made the explosives.

Methane, which is common "fire damp," or marsh gas, and which is abundant in natural gas, is the source of one explosive. The other comes from ethene, a colorless, odorless gas found in natural gas. Each condenses to a solid when treated with formaldehyde. Nitrogen is then added. This makes a mixture which can be substituted for nitroglycerine.

Nitroglycerine constitutes from 20 to 75 per cent of the bulk of all explosive power. These new natural gas explosives act similarly. Steam is used because it extracts formaldehyde cheaply from natural gas. Air furnishes the nitrogen.

Natural gas dynamite has a high economy value in time of war for it would effect the saving in glycerine which comes from food fats, the supply of which is often drained for the making of high explosives.

■ ■

Tex-Mex Transfers Managers

An exchange of managers in the offices of the Tex-Mex Natural Gas Co., Houston, Texas, resulted in May transfers of H. C. Osborne to Falfurrias, Texas, from El Campo, and Paul Rogers from Falfurrias to El Campo. J. C. Shearer was recently made manager at Wharton, Texas.

The $2500 all-gas model home, one of the features of the Southern California Home Show, held at the Pan Pacific Auditorium, Los Angeles, in May, has been moved to the vicinity of Whittier, Calif., and reopened June 4 under the auspices of the Southern Counties Gas Co. and the Building Contractors Association of Southern California.

THE WARD

WARD'S BILT-IN THERMO-CONTROL
is part of the furnace

You don't have to hire an electrician to help you install a WARD FLOOR FURNACE. There are no external parts . . . no wires to run. WARD'S thermostat is not a separate accessory . . . not up on the wall. It is built into the furnace with control indicator in a corner of the register. As part of the furnace, it contacts *all* the room air as it circulates through. Its unusually accurate control of temperature has been a big factor in the popularity of our product.

THE RESULT OF
THIRTY YEARS OF FURNACE BUILDING

The WARD FLOOR FURNACE is entirely self-contained. All controls and accessories are built in. This makes installation simple . . . the complete furnace is dropped into the floor opening, attached to gas line and vent, and is ready to go to work.

Features of Ward construction include *Bilt-in Thermo-Control,* an accurate thermostat that is part of the furnace (see illustration at left) . . . *Automatic Safety Pilot,* which shuts off gas flow immediately if flame is extinguished . . . *Cradle Circulator,* which makes air movements steady and continuous.

The furnace is built of heavy gauge rust-resisting iron to give a lifetime of heating service. Heating element is hand acetylene welded to insure strength, durability and tightness against gas leakage. Room air cannot contact flame and products of combustion are vented to out-of-doors.

There are no hot blasts, no chilly drafts, no frigid floors or cold corners, no sweating walls or steaming windows in a WARD-warmed home.

Ideally suited for one-story homes, stores and office buildings. Hundreds of meters on your lines can show you better profit through installation of WARD FLOOR FURNACES.

YOUR LOAD IS AS GOOD AS THE APPLIANCE YOU SELL

FLOOR FURNACE

WHEN YOU SELL THEM A WARD...

YOU MAKE THEM FRIENDS OF GAS FOR LIFE

Yes, gas will do the "four big jobs" better than anything else . . . if you give it a fair chance. Gas doesn't consume itself . . . so its reputation depends on the merits of the *appliance* in which it is used.

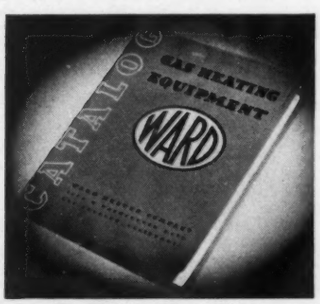
In house heating, for instance, if your consumers use your gas in "any old kind" of inferior heating appliance you can't blame them if they become dissatisfied with the fuel.

BUT. . . when the same fuel is used in a first class vented appliance. . . like a WARD FLOOR FURNACE . . . you make them friends of gas for life.

This is why we so persistently remind you that "your load is only as good as the appliance you sell." This is why we urge you that it pays to sell the best. This is why we say that your gas and a WARD FLOOR FURNACE are *an unbeatable combination* for load-building customer satisfaction.

We should know a little something about it because we have had thirty years' experience finding out what gas users want in the way of a heating appliance . . . and thirty years' success in satisfying that need.

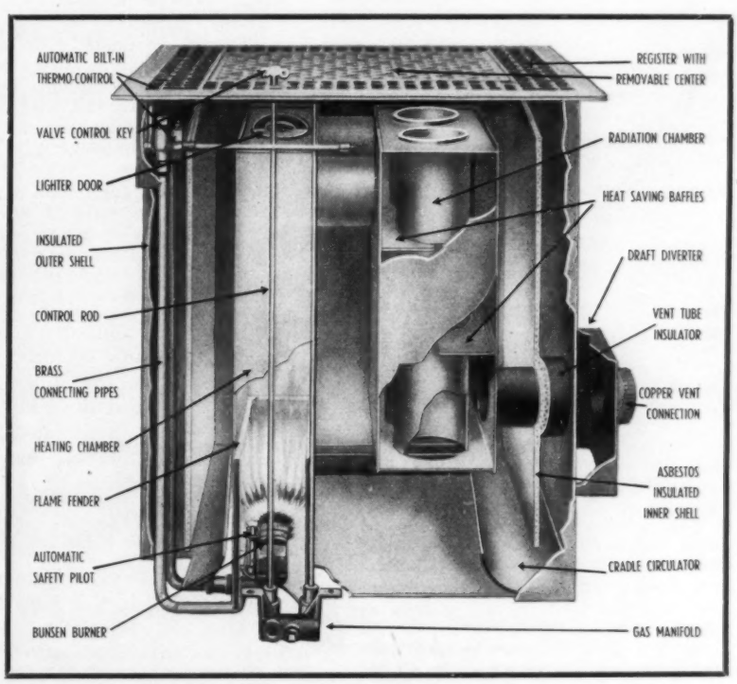
Advance orders make this look like Ward's biggest year . . . so wouldn't it be good business to check on what WARDS could do to build and protect load on your lines in the 1939 heating season?



ASK FOR THIS CATALOG

For many utilities this catalog has been the beginning of a "warmth friendship" with WARD. It contains facts that will help you decide whether WARD FURNACES can be profitable appliances in your merchandising department . . . and dependable salesmen of your gas. On request, we'll be glad to send you a copy with our latest price list.

WARD HEATER COMPANY
LOS ANGELES



FACTORY REPRESENTATIVES

A. S. KINCAID	J. H. STUBBINS	H. C. SANDERSON	W. D. ROBERTS	LEON M. TAYLOR
2012 North Harwood	300 East 68th Terrace	207 Fulton Building	468 Peoples Gas Building	3200 Main Street
Dallas, Texas	Kansas City, Missouri	Pittsburgh, Pennsylvania	Chicago, Illinois	Dallas, Texas

THE WOMAN'S Viewpoint

Fair's Fair

Of course, nobody going to the New York World's Fair would dream of passing up our own beautifully attractive and interesting Gas Exhibits building. And one of the real attractions is the puppet opera show in our own air-conditioned theatre, where you can hear song recitals by such celebrities as Flagstad, Tibbetts, Melchior and Marian Anderson during the day, and two performances of such classic grand operas as "Rigoletto," "Carmen," "Faust," etc. during the evening.

But, you must be sure to meet Olive and Betty Kemp, usherettes at the theatre, and pulchritudinous duplicates to the last dimple if there ever were. Betty and Olive were graduated this year from Jamaica High School and this is their first venture into the business world. They considerably enhance the welcome the gas industry is extending its friends to see what's what, and enjoy themselves while doing it.

Courteous Cashiers

Nelle Kinney, Cashier, Southern Counties Gas Co. of California, Santa Monica, bespeaks the intelligent cooperation of all utility cashiers in helping to win those all-important friends for their companies. Sez Miss Kinney:

MY PUBLIC!

"My Public! It is not a glamour girl of the screen speaking, but a public utility cashier. We, too, have our public; a public that derives their impressions of the company mainly through the manner in which we serve them. Tact, consideration, friendliness, and a genuine desire to be helpful are our attributes, rather than the glamour of the screen star.

"Much has been written about the home service director and her relations with the public, and extremely important are these activities as we all know; but we girls who meet the public have an equal chance to make friends for the company. Many of us are located in the smaller cities and towns where we see the same faces month after month. These people are our friends, and we want them to feel that they are friends of the company as well. A smile, an inquiry as to their health, perhaps a comment about 'the baby,' makes them feel that the company, and ourselves, are genuinely interested in their welfare. Remembering faces and names is always flattering to a person's esteem, for fundamentally we are all more concerned with our own little world than anyone else's.

"So remember that a smile will win a friend for ourselves, and for the company; a frown, or a disinterested manner of serving our customers, might lose one."

Applying For a Job

The personnel manager of one of the larger industrial companies has suggested the following rules when making a written application for a job.

(1) Answer the advertisement point by point, exactly as it is written, giving brief information as to experience, age, qualifications, and any other particulars required. It is a good idea to clip the advertisement and paste it at the top of your application.

(2) If you feel that it is absolutely necessary to give supplementary details about yourself, list them neatly on a separate sheet attached to your letter. Don't try to cram everything into the letter. It will be far more inviting if it looks short, crisp, and businesslike.

(3) Write in simple, short sentences, without pompous phraseology or "commercial English." Remember that most of the other applicants will be using hackneyed phrases, and if your letter be simple and to the point it will stand out by comparison.

(4) Type your application if you can, but in any case make it neat. Your prospective employer has to judge your whole character from the wording and appearance of a single letter—so it's worthwhile to take some trouble over it.

And I might add, don't try to be glamorous. I know of one girl who lost a good job, for which she was apparently well qualified, not for what she wrote in her application, but for the glamorous inferences that could be read between the lines of her letter.

Home Service's Sales Value

Jane Tiffany Wagner, home service director, Servel, Inc., is convinced that there is a tremendous sales potential in our home service departments which should be used to the utmost. In the March-April, 1939, issue of *Servel Utility News*, she presents an excellent case for the sales value of active home service participation in the present "Man the Sales" gas refrigerator campaign.

"I know from my own experience," she writes, "that home service workers are anxious to render help to the sales department at all times. Some of them are perhaps reluctant to volunteer such help when not specifically requested, but all of them will be glad to do so when asked. Sales managers who do not ask for this type of assistance are overlooking a real opportunity for increased sales."

I am glad Jane Tiffany Wagner has been so outspoken, but must we always be such "genteel young ladies" and wait until we are asked? Why can't we take the initiative, if we are so sure we can help, and offer ourselves, lock, stock and barrel, as enthusiastic helpers in this all-important job of selling gas refrigeration. Or are some of us scared that we might be invited to go out and get an order, and thereby lower our status as home service workers?

Personally, I feel the finest kind of home service performance is attained when we can satisfy a woman to the extent that she is willing to invest her money at our insistence, in the kind of gas equipment we are urging her to use. But then, I'm not a home economist.

Elected to Board

For the first time since the employe organization was formed 31 years ago, a woman was chosen recently to serve on the board of managers of the Mutual Aid Society of the Westchester Lighting Co., Mount Vernon, N. Y. More than 3000 employes, of whom 425 are women, are members.

Mrs. Jane Hope Appleman of the company's advertising department is the newly elected woman member of the board. Further recognition by the company of the importance of the woman's viewpoint in the gas industry is seen in the election of Mrs. Appleman. A resident of Bronxville for 12 years, Mrs. Appleman has been active in women's club and civic affairs including welfare work. She is a member of the Bronxville committee of the Westchester County Children's Association, was formerly chairman of the literary department of the Bronxville Women's Club, and is contributing editor of *The Villager*, the club's monthly publication. A widow, Mrs. Appleman has two children.

■ ■

L. P. A. Eberhardt Dies

Louis P. A. Eberhardt, known as the "Father of Kenmore" (N. Y.) died April 20 at 79 years of age. He founded the Kenmore Fuel and Natural Gas Co., was Kenmore's first postmaster and built the first house in that city in 1889.

IF ALL THE PEOPLE who are going to replace their worn or out-moded automatic refrigerators this year were to put up signs like this, it's estimated there'd be more than a million of them in this country.

This represents a special opportunity to you.

For, with gas refrigeration, you alone are able to offer these people all the things they're naturally seeking as a result of their experience with the refrigerators they're replacing.

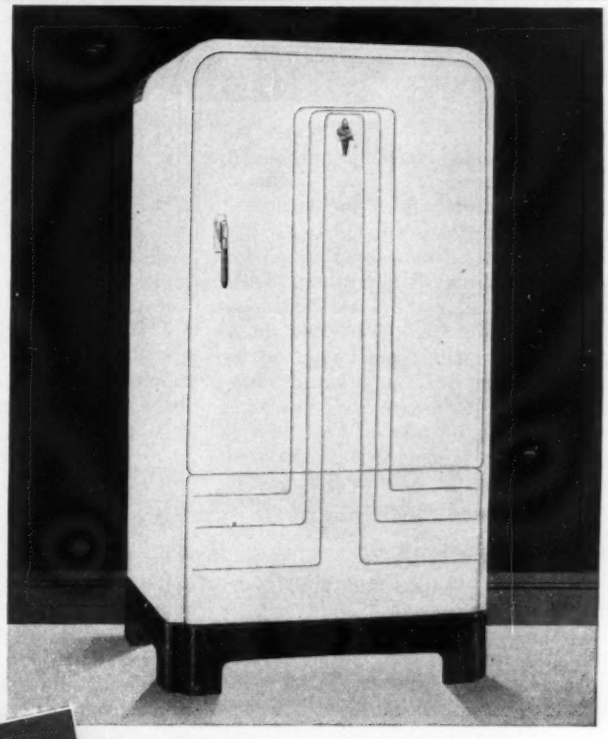
You're able to offer them the advantages of the only automatic freezing system with no moving parts to wear or make a noise.

BUILD NEW LOAD NOW!

If you cash in on this replacement business now, you and your men will win prospects and make sales which otherwise you may not have a chance to get for years.

Not only that, but if you start these people using Servel Electrolux today, they'll get a new experience in gas service that will be even more profitable to you in the end than your immediate load increase.

They'll tend to use "Gas for All Four Jobs"... buy other gas appliances and, by word of mouth, help establish the modernity of gas and gas service in your community. Servel, Inc., Evansville, Ind.



The SERVEL ELECTROLUX Gas Refrigerator

Gas Refrigeration . . .

- **Publicizes Modernity of Gas**
- **Protects Your Present Gas Load**
- **Stimulates Sale of Other Gas Appliances**
- **Builds Gas Load Without Extra Investment**
- **Promotes "Gas for All Four Jobs"**

WINS GOOD WILL FOR GAS AND GAS SERVICE

During the "Fuel Saver" campaign forests of water heaters festooned with multicolored display pieces crowded the sales floors and filled the windows of the Iowa-Nebraska Light & Power Company's 34 gas offices.

"Fuel Saver" Water Heater Drive Smashes Records

By W. JOYCE AYRES

Advertising Director,
Iowa-Nebraska Light & Power Company

HISTORY has been made in the sale of automatic gas water heaters, and the vehicle by which such successful results were produced was the unique "Fuel Saver" campaign. The company that landslided these sales under the wire is the Iowa-Nebraska Light and Power Co. of Lincoln, which in cooperation with other United Light and Power Service Co. organizations, as well as a number of other midwestern utilities, launched the "Fuel Saver" crusade against furnace coils early in 1939, in what was believed to be the first region-wide concentrated effort to sell automatic gas water heaters in the depths of winter.

While many of the cooperating companies have shown mild successes to date, the Iowa-Nebraska organization with 100 per cent company-wide employe cooperation has chalked up results that set an alltime high in January water heating sales and has in the campaign's first four weeks *sold more than 50 per cent of its entire year's quota of 900.*

The Iowa-Nebraska is a company of 24,500 residential gas meters, which at the end of 1938 had reached a saturation point of 30 per cent on automatic gas water heaters, while more than 70 per cent of its customers had some form of gas water heating. In establishing 1939 quotas approximately one sale for every 25 residential meters was the basis for computation, hence 900 automatic gas heaters for the year was the goal for which the Iowa-Nebraska company was to shoot.

The "Fuel Saver" campaign was an idea growing out of a discussion of plans for "plus" water heater business in 1939. The group of utility sales executives who "hatched the plot" had one further and long-range step in mind—that is, to eventually convert automatic water heaters from purely a seasonable item (spring and summer) into a year-around selling appliance, pushed as briskly and with as much success in January as it is in June.

The economy appeal rang the bell with the idea's planners, and ultimately the "Fuel Saver" theme was adopted, appealing to the householder to save a percentage of his fuel bill by removing his furnace coil—and since he would then be in need of hot water from some other source—install an automatic gas water heater.

The fuel saving story in January seemed to its planners "a natural" and results during the first four weeks of the campaign indicate that the idea has clicked. Predicated upon the thought that people are more conscious of their fuel costs in January and February, with more time to think about such items as furnace coils being "tapeworms" of the fuel supply, with Christmas bills and first-of-the-year expenses to be met, with more of a disposition to save at this time than at any other time of the year, with more hours spent at home to receive salesmen, the "Fuel Saver" campaign was launched immediately after New Years for a 10-weeks' period.

A complete program of advertising and sales promotion was created, prepared and distributed to support the selling efforts. All major advertising media were pressed into service, with coordination of advertising and selling emphasized. The general media copy, particularly newspaper and outdoor, was confined to a "teaser" style, yet designed in sufficient challenging fashion to arouse instant and general curiosity. Specific and detailed information of the "Fuel Saver" plan was incorporated in a barrage of sales promotion material, varying in size, shape, color and content. All advertising and sales promotion, however, stressed the saving of a percentage of the fuel supply now, and added "Try a Fuel Saver—Convince Yourself," indicating a free trial period.

Since January and February are annually "dog days" in appliance sales production, as well as in shop time for service departments, all available manpower of the utility has been marshalled to thoroughly canvass the entire list of the company's present and former services not now experiencing the multiple benefits of automatic water heating. This house-to-house canvassing in most instances was conducted by crews of salesmen, pooling their immediate results but retaining individually any unsold prospects in their respective territories for a later call back. In the conduct of this crew-selling several informal contests were developed between individual members of the same crew, with a result that some crew-members completed an almost unheard-of job to outdo fellow members in hanging up a banner week. So spirited was the rivalry in one Iowa-Nebraska district sales crew during the third week of the campaign that the group handed in a total sales report *for the week* which *nearly doubled* the entire 1938 sales for their division. Most districts of the company have experienced similar success with the crew-selling plan, stating that this method almost entirely eliminates the many psychological disadvantages accompanying the average "cold canvass."

During the 10 weeks' period of the

THE ACCELERATOR DOES IT!

Heat acceleration to the experts

SOLID COMFORT IN THE HOME

THE MINNEAPOLIS-HONEYWELL Acratherm, which embodies the exclusive M-H principle of Heat Acceleration, has done more to revolutionize home heating comfort than any other single development in the last twenty years.

The secret is the Accelerator which "does things" for the heating system that are absolutely impossible with a conventional thermostat. It actually senses temperature changes before they occur and speeds up or slows down the heating system to meet them. The Acratherm is one of a series of controls developed by Minneapolis - Honeywell to meet modern automatic heating needs. Your customers look for the M-H Symbol when they buy heating equipment. They know M-H controls will bring them lasting satisfaction.

Minneapolis-Honeywell Regulator Co., 2946 4th Ave. S., Minneapolis, Minn. Branch and distributing offices in all principal cities.

MINNEAPOLIS-HONEYWELL *Control Systems*

Brown Industrial Instruments

Scores of 24-sheet posters, adhering strictly to "teaser" style copy, challenge public attention and curiosity with the appeal of substantial saving on the "fuel bill NOW."

campaign every display floor in the company's 34 gas offices resembles literally a forest of water heaters. Mass displays crowd each floor and fill all windows, augmented with festive, multi-colored banners, stickers, pennants, backgrounds and display cards, each proclaiming some individual feature of automatic water heating.

The attention of the entire gas industry apparently has been attracted to this out-of-season campaign. Inquiries have been made regarding "Fuel Savers" from all parts of the United States, and to date more than a score of companies have adopted the plan in at least modified form. Others indicated great interest in the idea but preferred to await the trend of results before putting the plan into operation.

This astonishing new and effective selling plan was created as an approach to the problem of attracting attention to the furnace coil with its so-called "free hot water" and replacing that unsatisfactory supply with full time automatic hot water service. It was developed and promoted through the United Light and Power Service Co. under the direction of C. A. Nash, vice president. The Iowa - Nebraska, which is one of the larger United Light operating groups, took the initiative in putting the plan to work and is leading the field in water heating sales during the winter months.

Cathodic Protection For Memphis Gas Co.'s Lines

The Memphis Natural Gas Co., Memphis, Tenn., will begin work this month on the installation of cathodic protection on 28 miles of its 210-mile, 18-in. transmission line that runs through four states between Monroe, La., and Memphis. When completed, this section will be included in a total of 117 miles under cathodic protection.

Direction of the four-state project has been in the hands of Birger Johnson, president of Memphis Natural Gas Co., Henry C. Wallace, vice-president and chief engineer of the Commonwealth Gas System, M. B. Higman, chief engineer and L. W. Campbell, pipe line superintendent of the Memphis Natural Gas Co. Robert J. Kuhn, consulting engineer of New Orleans, supervised the design and installation of the cathodic protection work on the system.

■ ■

Washington Gas Co. Mails Sales Messages to Homes

The Washington Gas and Electric Co., Tacoma, is conducting a new customer drive consisting of five mailings sent to homes piped but not at present using gas. First is a double, business reply postcard asking whether or not the occupants know the house is piped for gas and what fuel is being used. The second is a postcard of thanks, calling attention to the fact that gas service is instantly available. The third repeats this information and makes a special offer on gas cooking appliances. The fourth again boosts gas cooking. The fifth tells of the speed, economy, and results obtained by the use of gas.

■ ■

WPA Extends Gas System to Louisiana Sugar Mill

A natural gas system, extending from Delcambre, La., to the Erath Sugar Mill, is being installed by the Works Progress Administration, according to WPA officials. The project calls for the construction of a natural gas transmission line and distribution systems in Iberia and Vermilion parishes.

A regulator station will be constructed and 150 house service connections will be made. Altogether, 33,640 ft. of pipe will be laid and welded at an approximate cost of $20,000.

■ ■

Exchange Texas Offices

W. R. Cabaness, manager of the West Texas Utilities Co. office in Munday, Texas, has exchanged positions with Arthur Mitchell, the company's manager at Ozona, Texas, according to Henry Batjer, of San Angelo, district manager.

New York-New Jersey Sales Conference Held June 1-2

THE 1939 Regional Sales Conference, sponsored by the Commercial Section of the states of New York and New Jersey was held at the Hotel New Yorker, New York City, on Thursday and Friday, June 1 and 2. Evenings were open for attendance at World's Fair. J. P. Leinroth, Public Service Electric and Gas Co., Newark, N. J., was chairman of the council in charge.

Among the many topics covered at the morning and afternoon sessions on these days were: Trends in Residential Consumption and Their Significance; Gas at the 1939 New York World's Fair; a Symposium on Housing; Water Heating; Training Salesmen; The Swing to Gas Refrigeration; Home Heating; Meeting Competition with CP Ranges; and a Home Service playlet.

Among those invited to address the conference were: C. E. Paige, president, Brooklyn Union Gas Co.; John B. Reid, co-chairman, A.G.A. Committee on Market and Economic Research; Hugh Cuthrell, president, Gas Exhibits, Inc.; editors of *Architectural Forum* and *American Builder;* representative of the Federal Housing Administration; several builders utilizing gas for the four big jobs in their home developments; R. A. Lawder, Consolidated Edison Company of New York, Inc.; B. A. Seiple, Jersey Central Power and Light Co.; Harold F. Coleman, The Brooklyn Union Gas Co.; H. S. Christman, The Philadelphia Gas Works Co.; H. G. Schaul, Westchester Lighting Co.; and O. F. Flumerfelt, vice-president, Iroquois Gas Corp.

■ ■

Power Commission Dismisses Pipe Line Co.'s Application

The General Gas Pipe Line Corp., Indianapolis, Ind., has been given permission to withdraw its application to the Federal Power Commission for a certificate of convenience and necessity for a proposed natural gas pipe line project. The pipe line company had applied for permission to build a line from the Kentucky gas fields into Indiana at an estimated cost of $4,500,000. The Commission dismissed the application for the reason that the company was unwilling or unable to present certain evidence requested.

■ ■

Pittsburgh Utilities Add Home Service Department

A home service department has been organized recently in the Pittsburgh, Pa., group of gas utilities controlled by the Columbia Gas and Electric Corp., Wilmington, Del.

Personnel of the new department includes Mrs. J. M. Nestor, Pittsburgh; Ann Riddle, Bellevue, Pa.; Camille Caldara, East Liverpool, Ohio; Catherine Hess, Wheeling, W. Va.; and Gladys Gale, Brownsville, Pa.

■ ■

Retired Sales Manager Dies

Levi H. Duncan, 78, former sales manager of the Pittsburgh Equitable Meter Co., died April 20 in Monroe, La. Mr. Duncan, who had been with Pittsburgh Equitable and its predecessor companies over 50 years, retired in 1931.

The Difference between paint and porcelain enamel is . . . 1000°

"That's why every manufacturer depends upon it"

"Synthetic finishes are 'baked on' at about the same temperature you would use in broiling a steak or baking beans. But porcelain enamel is a mineral substance through and through, like opaque glass, and *it* is fired onto its supporting sheet of steel at the 'white hot' heat of 1550° F. And it is that intense heat that makes it glass hard—impervious to all stains, cigarette burns, and common abuse. And also that is why 100 per cent of all refrigerator manufacturers depend on porcelain enamel for their interiors. There is where the heavy crocks, the rough milk bottles and big bowls really put a finish to its test. Porcelain enamel, alone of all finishes, stands that abuse and that's why *every* manufacturer depends on it.

"And madam—if it is so good for the interior—of course you should have porcelain enamel for the exterior. Buy the *all*-porcelain appliance. It is the one finish that will give you *continued years of pride*. Make certain the LUSTERLITE label is on your appliance. It is your guarantee of quality porcelain enamel."

GENUINE
LUSTERLITE
PORCELAIN
ENAMEL
To Clean: Merely wash with soap and water. No other care required to retain this lifetime lustrous finish

Remember: the more LUSTERLITE porcelain enamel on the appliance you sell the more profit for you through customer satisfaction. Tell your supplier that you want the ranges and heaters you sell to carry the LUSTERLITE label. It is an added selling point for you—(a powerful one).

CHICAGO VITREOUS ENAMEL PRODUCT CO., 1405 South 55th Court, Cicero, Illinois

LUSTERLITE *Porcelain* ENAMELS

Bogan Named A.G.A.E.M. CP Field Sales Counsellor

JOHN E. BOGAN, of Peoria, Ill., has been appointed field sales counsellor of the Association of Gas Appliance and Equipment Manufacturers' domestic gas range division, it has been announced by E. R. Guyer, president of the Association, from the national headquarters in New York.

J. E. BOGAN

Mr. Bogan, formerly director of sales promotion for the Central Illinois Light Co. (Peoria, Ill.), will devote his time exclusively to field activities of the CP gas range program being projected nationally by the Association.

Mr. Bogan has been associated with the Peoria utility for more than 15 years and has served on several committees of the Illinois Public Utilities Association. Mr. Bogan served in 1938 as assistant regional manager for CP promotion in Illinois.

■ ■

Puppets Perform Operatic Roles at N. Y. Gas Exhibit

Believed to be the first of its kind in history, a puppet grand opera company performs daily as a special exhibit of the gas industries' "Court of Flame" at the New York World's Fair.

"Rigoletto" was the first presentation and the performance was notable for the fact that the puppets are controlled from beneath the stage rather than from strings above, tending for far greater realism. Expert coordination of lighting, stage effects and music, together with the colorful costumes, create the illusion of a flesh and blood performance. There are 160 of these stringless puppets, whose acting is synchronized to recordings of popular grand operas.

The repertoire of seven operas which will change weekly consists of: "Faust," "Aida," "Hansel and Gretel," "La Traviata," "I Pagliacci," "Carmen," and "Rigoletto."

■ ■

Texarkana Lets Contract For Natural Gas Supply

The Texas city council of Texarkana, Ark., has given a contract to Bennett Petroleum Corp. to provide natural gas for a city distribution system. The Bennett corporation will construct an 8-in. pipe line from Texas gas fields to the city gates.

Under terms of the contract the city must use a minimum of 500,000 cu. ft. of gas per day.

■ ■

Wisconsin Co. Grants Leave To Vice-President Phenicie

C. R. Phenicie, vice president, Wisconsin Public Service Corp., Green Bay, has been granted an indefinite leave of absence from active duty with the company effective May 1, according to an announcement made by J. P. Pulliam, corporation president. Mr. Phenicie has requested the leave in order that he might attempt to rebuild his health. He will continue as an officer and director of the company.

The temporary retirement of Mr. Phenicie interrupts a record of utility service that dates back to 1902 when Mr. Phenicie went to work for the Dearborn Light and Power Co. Following employment in Chicago Mr. Phenicie came to Green Bay in December, 1911, and since that time has successfully filled the positions of superintendent, general manager, vice-president and director of the company which has grown to an organization now serving over 200 communities in Wisconsin.

In December of 1936, Mr. Phenicie was honored by officials and employes of the company upon the completion of 25 years of service with the Wisconsin Public Service Corporation.

■ ■

W. P. Hutchinson, Sprague Meter President, Dies

W. P. Hutchinson, president of the Sprague Meter Co., Bridgeport, Conn., passed away on Sunday, May 21. For the past 30 years from coast to coast, Mr. Hutchinson has been a familiar figure at all gas industry meetings. He was a member of the American Gas Association, and for the past 29 years had been a participant in the activities of the Pacific Coast Gas Association.

W. P. HUTCHINSON

Mr. Hutchinson missed his first convention in many years when his recent illness prevented his appearance at the A.G.A. Natural Gas Department Convention in Tulsa last month.

■ ■

P.U.A.A. Annual Convention To Be Held June 18-22

The annual convention of the Public Utilities Advertising Association will be held jointly with the annual meeting of the Advertising Federation of America, June 18-22, at the Waldorf-Astoria Hotel, New York City. Names of the 18 judges who will select winners of the 1939 Better Copy Contest, sponsored yearly by the P. U. A. A., were announced recently by Howard Weeks, Consolidated Edison Co. of New York, Inc., and president of the Association. Winners of the contest will be announced at the convention.

■ ■

John R. Fenniman Dies

John R. Fenniman, treasurer of the Consolidated Edison Co. of New York, Inc., died April 21 of a heart attack at his home in Brooklyn, N. Y. Mr. Fenniman had been associated with the Consolidated Edison Co. since 1904 when he became a clerk with Consolidated Gas Co., a predecessor of Consolidated Edison.

Franck Named Vice-President Of Michigan Consolidated

BERNARD T. FRANCK, for three years general sales manager of Michigan Consolidated Gas Co., Grand Rapids, Mich, has been elected vice-president in charge of sales and service of Milwaukee Gas Light Co., Milwaukee, effective April 1.

B. T. FRANCK

Mr. Franck is a member of the Refrigeration Committee of the A.G.A., and also of the Domestic Range Committee. In 1938 he was chairman of the Mid-West Regional Gas Sales Conference at Chicago.

Wallace M. Chamberlain, for two years assistant sales manager, has been promoted to general sales manager, succeeding Mr. Franck. Mr. Chamberlain has been with the company for 11 years.

W. H. Kurdelski, formerly refrigeration manager, succeeds Mr. Chamberlain as assistant sales manager in charge of domestic sales.

■ ■

E. J. Schwanhausser Elevated By Worthington Pump

H. C. Beaver, president, Worthington Pump and Machinery Corp., has announced the election of Edwin J. Schwanhausser as a vice-president of the corporation. Mr. Schwanhausser's connection with Worthington dates back to 1915, at the time of his graduation from the Stevens Institute of Technology.

Assigned to the Harrison, N. J., works, he served in a number of capacities, reaching the position of assistant works manager in 1927. In 1929 he was transferred to Buffalo, N. Y., as works manager, which position he now holds. As vice-president and works manager he will continue in his present responsibilities.

His duties at the Buffalo Works have been concerned with the development and manufacture of gas engines, air, gas and refrigeration compressors, products of that works.

■ ■

Woman Leads Industry In 1939 Refrigerator Sales

Florence V. Holtz, floor sales representative in the Pitkin office of Brooklyn Union Gas Co., is the first person in the United States to receive $100 in cash from Servel, Inc., for selling 100 Electrolux refrigerators at retail during 1939. Twenty such prizes have been offered by the refrigerator company to salesmen in all parts of the country.

■ ■

Luzerne Co. Cashier Dies

Anna R. Evans, cashier of the Plymouth district office of the Luzerne County Gas and Electric Corp., Kingston, Pa., died April 12 following a brief illness. She had been with the Luzerne company since 1923, and was cashier of the Plymouth office for 11 years.

WEDGEWOOD Is Unexcelled the Year 'Round

Thousands of homes are enjoying the new WEDGEWOOD year 'round, all-season CP gas range with compact gas circulating heater built right into the range. Heavily insulated throughout, it assures COOL kitchens on HOT days. At the turn of a knob the heater lights itself and quickly and economically WARMS the kitchen and breakfast room on COOL days. Convenient, too—no carrying of wood or coal, no emptying of ashes.

- HIGH SPEED LOW TEMPERATURE OVEN
- SMOKELESS ASTOGRIL BROILER
- FOUR SPEED-PLUS-SIMMER BURNERS
- EVERY BURNER SELF LIGHTING
- OVEN HEAT CONTROL
- HEAVILY INSULATED THROUGHOUT

Model 4285 OT Open Top

Gas THE MODERN FUEL

Model 4245 CT Closed Top

Available for All Types of Gas

WEDGEWOOD

THE MODERN GAS RANGE
OVER A MILLION WESTERN USERS

JAMES GRAHAM MANUFACTURING COMPANY, SAN FRANCISCO, LOS ANGELES, NEWARK, CALIFORNIA; PORTLAND, OREGON

if THERE'S ANY DOUBT IN YOUR MIND about your

GAS PURIFICATION

ask Connelly. Every day more gas companies are finding Connelly's Complete Purification Service the money-saving answer to cost and performance problems. And don't be too sure *your* plant's purification costs can't be lowered. By a searching analysis of requirements our Engineering Dept. has recommended changes resulting in direct savings up to 50% for gas companies. Over 65 years devoted to gas purification plus daily contact with problems all over the field make possible these remarkable savings.

HOW MUCH SHOULD PURIFICATION COST?

Send a sample of your used material and give us an idea of the required capacity. We will analyze and advise for further use or disposal, also tell you what your normal costs should be. Write Connelly, today!

CONNELLY IRON SPONGE & GOVERNOR CO.

Chicago, Ill. **Elizabeth, N. J.**

ENSIGN FILTER

for natural gas engines

Filters out all foreign matter in gas supply lines

Here is an important addition to the complete line of ENSIGN Natural Gas and Butane carburetion equipment. ● Installed in the gas supply line, this newest ENSIGN development filters out all injurious foreign matter which might be present to cause trouble. Made in two sizes for installation in 1" and 2" vertical or horizontal pipe lines, the ENSIGN Natural Gas Filter is extremely simple, and the element is easily removed for cleaning or replacement. Full particulars on request.

ENSIGN CARBURETOR CO., LTD.

LOS ANGELES · DALLAS · CHICAGO

B. F. Pickard Is Elected Head of Interstate Power

B. F. PICKARD, who has been president of the Central States Power & Light Corp. for the last five years, was elected president of the Interstate Power Company on May 4, 1939, in Dubuque, Iowa. Both Central States Power & Light Corp. and Interstate Power Co. are subsidiaries of the Utilities Power & Light Corp. of Chicago. Mr. Pickard will be located in Dubuque, Iowa. He succeeds James F. Orr, who resigned on May 4 because of ill health.

B. F. PICKARD

In addition to directing the business of the company, Mr. Pickard will continue to supervise the properties of Central States Power & Light Corp. situated in Iowa, Minnesota and North Dakota. He will also continue as a director of the Laclede Gas Light Co. and the Missouri Natural Gas Co. with which organizations he has been closely affiliated for several years.

Interstate Power Co. and its subsidiaries render electric, natural gas, manufactured gas and water services to 327 communities in Iowa, Illinois, Nebraska, Minnesota, North Dakota, South Dakota and Wisconsin.

■ ■

P.C.G.A. Publishes New Data Book on Gas Utilization

The Pacific Coast Gas Association has recently published a new edition of the architects and builders manual formerly called the *Data Book on Gas Fuel*, but now renamed the *Data Book on Gas Utilization*.

The new 56-page book has been prepared in semi-technical style under the supervision of H. Roy Kelley for architects, engineers, contractors and builders, and is illustrated with cut-away photographs, line drawings and tables. Gas refrigeration, ranges and cooking devices, water heating, house heating, piping and venting are discussed in the handbook.

Copies may be obtained from the Pacific Coast Gas Association for 75 cents each, 60 cents each in lots of 10 to 99, and 50 cents each in lots of 100 or more.

■ ■

Lynn Replaces Hargrave As Dallas Co. Sales Supervisor

C. K. Patton, new business manager, Dallas Gas Co., has announced the appointment of Jake M. Lynn, Jr., as domestic sales supervisor to replace George H. Hargrave, who resigned recently to become sales representative for L. J. Mueller Furnace Co. Mr. Lynn has been in charge of commercial sales, and will now supervise both branches of the sales department.

■ ■

Virginia Co. Changes Name

The name of the Roanoke (Va.) Gas Light Co. has been changed to the Roanoke Gas Co. Luke C. Bradley is president of the company.

United Gas Corp. Will Establish General Headquarters in Houston

UNITED GAS CORP. has virtually completed negotiations for a 15-year lease on a Houston office building and will establish its general headquarters therein as soon as arrangements are completed, according to an announcement issued May 27. Definite announcement as to the location will be made as soon as the lease has been signed. This move of United Gas Corp. is in line with the company's program to consolidate in Houston headquarters covering all operations in Texas, Louisiana and Mississippi, the announcement said.

The plan calls for establishment of the Houston Gas & Fuel division of the company in the same building, and space will also be leased to Union Producing Co. and United Gas Pipe Line Co. in which to house their district operating headquarters in the Houston area.

The relocation of United Gas Corp. general offices in Houston will be a further step in the program which was launched earlier this spring with the construction of a local distribution plant on Navigation Boulevard, upon which work is now progressing. The plant is expected to be completed this summer, at a total cost of $175,000 and will comprise distribution offices, warehouse, meter repair shop, garage and shops, on a five-acre lot.

The company operates 3235 miles of natural gas distribution mains in approximately 175 cities and towns in the states of Texas, Louisiana and Mississippi.

Plans for the construction of a $750,000 office building at Fairfield and Jordan Streets in Shreveport have been announced by the Fairfield Properties, Inc. The building will be completed in January, 1940, and will be occupied by the general offices of Union Producing Co. and United Gas Pipe Line Co.

The building, consisting of seven stories and basement, with a tower on the roof, will be air conditioned throughout, a contract for installation of this equipment having been awarded to the York Ice Machinery Corp.

■ ■

Peoples Gas and Electric Co. Plans $125,000 Expansion Program

T. L. Connor, gas superintendent of the Peoples Gas and Electric Co. of Mason City, Iowa, has announced an expansion program involving a $125,000 expenditure. Among the projects planned are three extensions to the present natural gas lines and the building of distribution systems in Manly and Ventura and in an additional area at Clear Lake.

To reach Manly a 4-in. gas line will be built from the main line near Joice east to Kensett and then south along highway No. 65. Ventura will be served by a 2-in. line extending one half mile north to the lateral extending from the main line to Mason City. The extension to Clear Lake will go through Methodist and Odd Fellows Camp and Dodge's Point.

■ ■

A.G.A. Leaders Visit Golden Gate Fair During Executive Conference

The Executive Board and Advisory Council of the American Gas Association held an executive conference at the Fairmont hotel in San Francisco on May 15-16. Conrad N. Lauer, president of the A.G.A., opened the meeting, and H. L. Farrar, president of the Pacific Coast Gas Association extended the official welcome.

On the evening of May 15 the P.C.G.A. gave a dinner to the visiting council at the gas industry exhibit at Treasure Island. There were 200 in attendance, half of them Eastern guests.

Luncheons for the wives of those meeting in the conference were given each day. The first was held at the Yerba Buena Club, Treasure Island, with Mrs. P. M. Downing the hostess, and the second at the Cliff House, with Mrs. H. L. Farrar the hostess.

■ ■

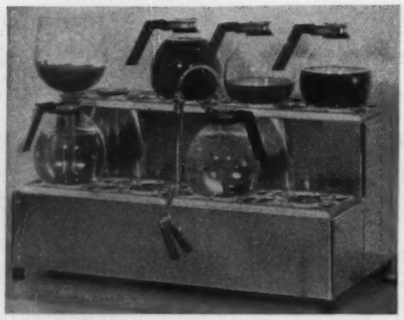
Wood Preservative Made from Gas

The Willmar Gas Co., of Willmar, Minn., has announced the manufacture of a by-product in its plant that will be called Tarsote. It is said to be an efficient and economical wood preservative that is especially valuable for lengthening the services of fence posts, barn floors, roofs and buildings. It is also used as a disinfectant for chicken and hog houses and barns, and for preventing and eradicating vermin.

High Speed Coffee Maker

Stovurn Manufacturing Co., Los Angeles, Calif.

Description: A new, high speed, gas operated coffee maker with full automatic operation. Encased in a heavy cast iron firebox is a finned, solid copper super-preheater capable of automatically delivering a jug of 210° F. water every 60 seconds. Preheated water is delivered through a swivel stem directly into jugs for coffee making or for tea and hot chocolate service. A heavy duty steam valve operates the flow through the stem. About 520 cups of coffee



can be made each hour. It has six safety-type, non-snuffing warmer burners and two high-speed maker burners. Each maker burner lights itself automatically from the weight of the jug as it is set down. The maker burners have a newly developed centri-flame which gives higher speed and efficiency. From cold to full operation requires but four minutes. The preheater pressure tank, being of solid copper, is non-corrosive. It has a removable end which permits quick cleaning without dismantling the maker. The exterior is finished in stainless steel and any section is independently removable. Grates are cast iron with bright nickel plating. Weight is about 85 lbs. and counter space needed is but 14 by 26 in.

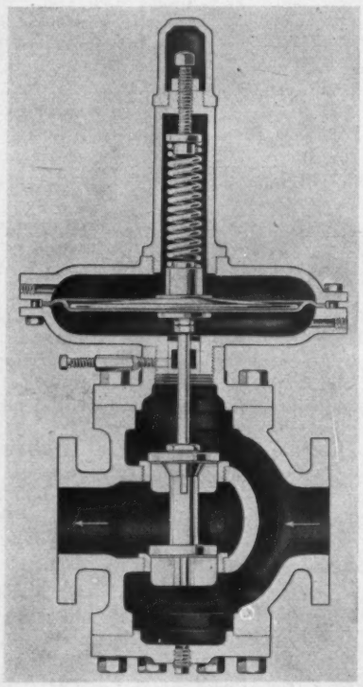
■ ■

Fisher New Differential Pressure Controls

Fisher Governor Co., Marshalltown, Iowa.

Model: Differential Pressure Controls, Types 146, 147.

Description: These controls maintain a constant differential pressure in a two-fluid system, or a differential across the regulator body. They are designed for service where a differential regulator can be used for approximately proportioning flows and similar functions. No. 146 is a lever and weight type of controller and is provided with a stuffing box in the upper diaphragm casing. No. 147 is spring controlled and is provided with a gasket-tight cap which covers the spring adjusting screw. Both are constructed with full capacity bodies which can be readily inverted. The balanced inner valve is not affected by fluctuating pressures. It has double bevel ground seats and is connected to the valve stem by a patented "Flexaline" connection which insures positive seating and more sensitive control. The diaphragm on top of valve body is made of special composition and is available in seven different



sizes to meet specific working conditions. The differential pressure ranges recommended are from 1 to 50 lbs. These differential controllers are available in globe pattern bodies, screwed, sizes ½ in. to 3 in.; or, flanged, 1 in. to 6 in. Larser sizes can be furnished. Write for Catalog "C."

■ ■

Moore's "Savoy" Gas Range

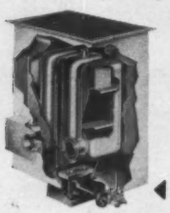
The Moore Corp., Joliet, Ill.

Model: "Savoy" Model 346.

Description: This is a CP cast iron gas range, with steel girder construction for rigidity; floating porcelain enameled parts for beauty; four double duty speed simmer Harper die cast aluminum burners; oven burner, maintains oven temperature as low as 200° F.; folding cover top, balanced spring construction; top burner grids, cast iron and porcelain enameled; cooking top heat reflector burner bowl, one piece die formed, marbelized porcelain, enameled finish, directs the heat against bottom of utensils; drip tray, porcelain enameled; even heat oven, large 16-in. heavily insulated on all sides, top, back and door, porcelain enameled over linings and oven bottom, two Eberized heavy non-tilt oven racks; burner lights when valve is turned on; Robertshaw oven heat control; roller bearing drop broiler drawer, heavily insulated, permits broiling with door open, chromium plated, smokeless and spatterless broiler grill; two utility drawers. Hardware: chrome handles with white base posts; optional equipment includes lamp, electric clock, minute minder and condiment set.

Payne SELLS GAS!

When you sell a Payne Furnace you sign up a satisfied gas consumer for life! A quarter of a century devoted exclusively to precision construction and engineered design of gas fired appliances means carefree heating for the user, a *permanent gas load for you.*



◀ The Payne Floor Furnace

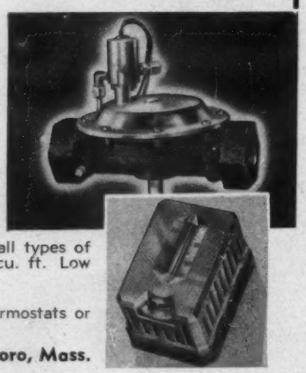
There is a Payne Gas Furnace for every heating need

FLOOR FURNACES • FORCED AIR UNITS
CONSOLES • WINTER AIR CONDITIONERS
DUPLEX FURNACES • GRAVITY FURNACES

Write for information

PAYNE Furnace & Supply Co., Inc.
BEVERLY HILLS, CALIFORNIA

NO SOLENOID TROUBLES
with
KLIXON
Electrically Operated Gas Valves



Klixon Gas Valves are operated by a positive-acting thermostatic bimetal disc instead of magnets or solenoids. Therefore they don't hum or stick. And they are controlled by calibrated time delays which prevent fluttering, chattering and ambient temperature troubles. Suitable for all types of gas and heaters. ⅜" to 1¼" I. P. S. sizes—through 1000 cu. ft. Low or line voltage.

COMPLETE GAS CONTROL SETS

Klixon gas valves are sold complete with Klixon Room Thermostats or separately. Full information on request.

SPENCER THERMOSTAT CO., 806 Forest St., Attleboro, Mass.

P.C.G.A. PREVIEW

COOPERATIVE LOAD-BUILDING

"SIMPLE AS A SNAPSHOT TO OPERATE MY MODERN GAS APPLIANCES"

• *In photography, her avocation, as in home-making, her vocation, Mrs. Niven is charmingly capable and efficient. An amateur, but no novice, she studied camera-craft under professional Harry Champlin. Her favorite picture subject is—but naturally!—her own chubby 18-months' old son.*

TURNING TABLES, we've *photographed the photographer*—presenting Mrs. Robert F. Niven of Los Angeles, our nominee for "Mrs. Young America of 1939." Above is shown her all-gas-equipped home. Its automatic gas appliances reflect the sure knowledge that makes her equally successful at home management, the exacting duties of a ...ng mother, picture-taking (her hobby) —and the important business of being graciously ... feminine. ☆ "Today," Mrs. Niven points out, "any bride can start hou... keeping with ...ndable gas servants.' They save so much time, work, trouble—and ... too—t... ☆ Your Gas Company and Gas ... performance of "all four" big ...

S. F. Fa...
in the ...

"I JUMP RIGHT OUT OF NEARLY 200,000 PAGES EVERY MONTH—TO REMIND WESTERN WOMEN OF THE ADVANTAGES OF GAS FOR ALL 4 DOMESTIC USES."

LET GAS DO ... REFRIGERATION

THE MODERN FUEL

P. C. G. A.
H. L. Farrar, President
Clifford Johnstone, Managing Dir.

JUNE 1939

COMMITTEE
A. C. Joy, P. G. & E.
J. S. Spaulding, So. Calif. Gas Co.

FULTON
Cut-Out Latch Regulator

Failure of Gas Holds No Hazard

If pressure drops below the set minimum on any line where the Fulton Cut-Out Latch Regulator is installed, the latch automatically shuts and locks the valve. Flow will not resume till the operator opens the valve by hand. Users of low-pressure furnaces and burners protect their equipment at little cost by adopting this safeguard. Approved by insurance companies. Write for Bulletin 2987.

Dependable C-F Regulators are offered for all requirements of pressure control. Catalog on request.

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HANDBOOK BUTANE-PROPANE GASES

415 Pages

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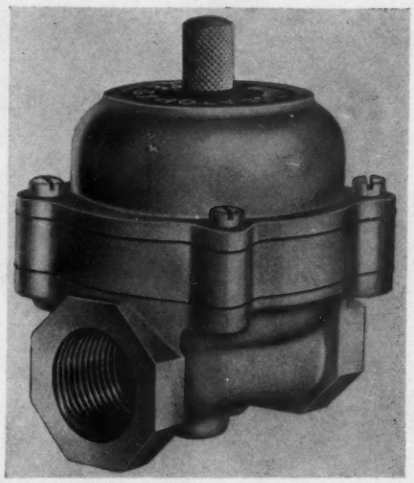
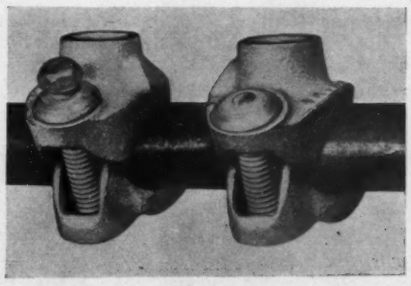


Pressure Regulator

The Wilcolator Co., Newark, N. J.
Model: Type G-1 Pressure Regulator.
Description: Improved pressure regulator for domestic gas appliances, which eliminates use of a vent and provides straight line pressure control. Double diaphragm type and incorporates a small valve for controlling pilot gas and a large main valve. The small valve operates like a conventional spring-operated pressure regulator, but, because of its small size and short stroke, accurate control of small volumes of gas is secured. No vent is needed, permitting the use of a strong diaphragm.

Through the use of two valves, straight line flow characteristics are secured both for small and large gas consumption. There is practically no change in outlet pressure through a range of approximately ¼ ft. per hour up to over 200 ft. per hour.

■ ■



Skinner Self-Locking Bolt

M. B. Skinner Co., South Bend, Ind.
Model: Skinner-Seal Saddle Tee.
Description: The new Skinner-Seal Saddle Tee, for installing gas appliances, can be secured optionally, at slight extra cost, fitted with self-locking bolt which also acts as an automatic gage of the proper tension the bolt should have applied to it. The bolt is fitted with a round button head and a half ball recessed nut. Above the head of the bolt, connected to it by a neck of a definite diameter is a secondary hexagon head which when tightened to a pressure of 30 ft. lbs. breaks off at the neck, leaving the button head only, which cannot be gripped with a wrench or pliers due to its shape.

W. H. Vogan Replaces F. O. Suffron as Pacific Coast Laboratory Chief

W. H. VOGAN, formerly chief inspector of the American Gas Association Testing Laboratories, Cleveland, Ohio, became supervisor of the West Coast Branch on May 1, replacing F. O. Suffron, who had been in charge for the past two years. This change is in line with the policy of periodically exchanging personnel, according to an announcement from R. M. Conner, director of the Laboratories.

Mr. Vogan was graduated from the mechanical engineering department of the Tri-State College of Engineering in 1927. He joined the staff of the Testing Laboratories in August, 1928. He has taken an active part in the mixed gas research program, and in the investigation of cast iron pipe joints. Transferred to the Testing Department in 1931, Mr. Vogan spent several years in the testing of all classes of appliances submitted for approval. Part of his time was devoted to periodical inspection visits at the premises of manufacturers. He was appointed chief inspector of the Testing Laboratories in February, 1937, and served in that capacity until his transfer to Los Angeles.

Mr. Suffron will remain in Los Angeles to complete an investigation of new quarters for the West Coast Branch, the property for which has been purchased. He will return to the Cleveland Laboratories.

During the stay of the A.G.A. Executive Board and Advisory Council in Los Angeles, May 13, Mr. Suffron was honored with a luncheon by more than 100 Pacific Coast utility men and appliance manufacturers. Arthur Bridge, vice president, Southern Counties Gas Co., presided at the luncheon, while R. G. Logue, chairman of the Pacific Coast division of the A.G.A.E.M.acting as toastmaster, presented Mr. Suffron with a wrist watch.

■ ■

Pennsylvania Gas Association Elects New Officers at Annual Meeting

At the 31st annual meeting of the Pennsylvania Gas Association, held May 2, 3 and 4 at the Lodge of the Skytop Club, Skytop, Pa., Leon B. Eichengreen, of Philadelphia, was elected to the presidency, succeeding E. E. Mensch, of Williamsport, Pa. It was the best attended meeting in the history of the organization, according to the secretary's report.

In addition to President Eichengreen, officers for the ensuing year, elected on the last day of the sessions, were: M. A. Boylan, Scranton, Pa., first vice president; P. T. Dashiell, Philadelphia, second vice president; F. W. Lesley, York, Pa., third vice president; William Naile, Lebanon, Pa., secretary; W. G. Sterrett, Jenkintown, Pa., treasurer, and A. B. Millar, Harrisburg, Pa., managing director.

Those presiding at the various sessions were William Naile, Distribution; James A. Schultz, Accounting; H. H. Ganser, Customer and Employe Relations; J. V. Postles, Production; and F. H. Trembly, Jr., New Business.

E. E. Mensch opened the conference at the banquet the first evening, while the highlights of the banquet on the second evening were the speeches of Conrad N. Lauer, president of the American Gas Association, and Gerald E. Stedman, vice president of the National Research Bureau.

■ ■

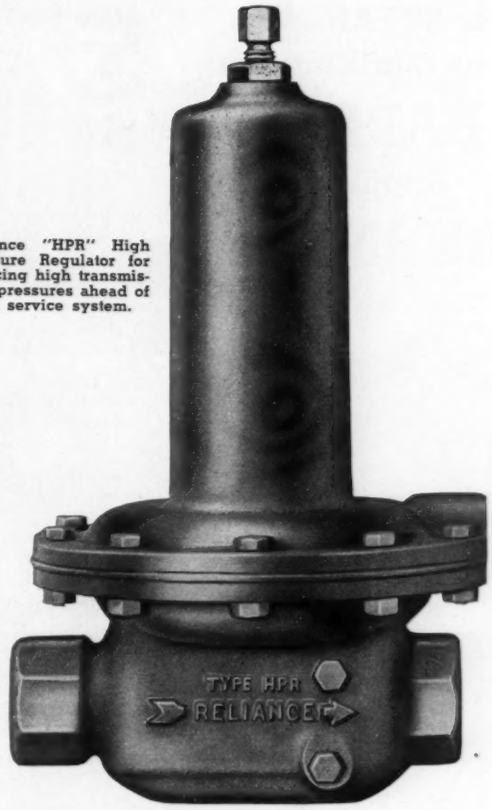
Southern California Co. Announces Rate Reduction, Effective July 1

Reduction of rates, involving a total annual cut of $1,300,000, over the Southern California Gas Co. system was announced in May by the California Railroad Commission. New rates are expected to be effective with meter readings on and after July 1. This is the second reduction in Southern California gas rates, arrived at through informal investigation, during the last two years. A previous reduction of $1,000,000 was taken in 1937 at the time of the merger of Southern California Gas Co. and Los Angeles Gas and Electric Corp.

■ ■

Community Natural in New Offices

The Community Natural Gas Co., a subsidiary of the Lone Star Gas Corp., held an open house on May 4 to celebrate its opening of new offices in Sherman, Texas, according to J. Y. Wheeler, district manager. The company has been in temporary quarters since last fall.



Reliance "HPR" High Pressure Regulator for reducing high transmission pressures ahead of the service system.

For Positive Pressure Control

Service Regulators operate more efficiently when high transmission pressures are reduced by Reliance "HPR" Regulators ahead of the service lines.

Any pressure up to 1000 pounds can be controlled within an outlet pressure range of from 2½ to 200 pounds. Outlet pressure is varied by the use of the proper model and its corresponding spring.

"HPR" Regulators are recommended for use on farm taps, for general use in gasoline plant and refinery installations and for controlling high pressure wells. Four models are available as pressure reducing regulators and back pressure regulators or relief valves.

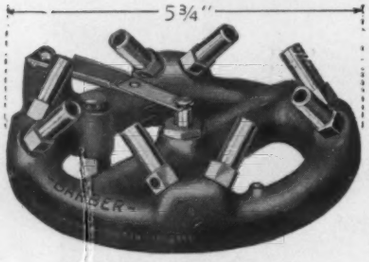
SEND FOR BULLETIN No. 48

RELIANCE REGULATOR CORPORATION

1000 MERIDIAN AVENUE ALHAMBRA, CALIFORNIA

RELIANCE

For BUTANE Gas
You Can Rely On
BARBER
Appliance
BURNERS



No. S. P.-15 Barber Burner
with Safety Pilot

Any gas-burning appliance can be equipped with a Barber Burner with special drilled jets to meet the requirements of Butane Gas. Servicing and backfiring are eliminated. There's a proper, reliable Barber unit for every size and type of appliance — and Barber means top efficiency. Write for complete literature, prices and discounts on the Barber line of Conversion Burners, Appliance Burners, Controls and Regulators.

The Barber Gas Burner Co.
3704 Superior Avenue Cleveland, Ohio

Recondition Pipe Lines at Lower Cost

On your distribution systems you can make extensions or repairs at lowest cost by coating your pipes with No-Ox-Id and No-Ox-Idized Wrappers. No-Ox-Id combinations act: (1) mechanically, to protect the pipe against destructive action from outside; and (2) chemically, to inhibit corrosion under the film.

No-Ox-Id combinations may be applied under your own supervision in your own yards, at a central point, or on the line. They may be applied by the hot or cold method, by machine or by hand. Write for data.

DEARBORN CHEMICAL COMPANY
310 South Michigan Ave., Chicago, Ill.

NO-OX-ID IRON RUST
The Original Rust Preventive

Los Angeles
807 Mateo St.
TRinity 3385

San Francisco
421 Bryant St.
SUtter 8688

State Fuel Supply Surveys Service to Cotton Gins

THE State Fuel Supply Co., of Oklahoma City, has completed a survey of natural gas service supplied by the company to 19 cotton gins in 12 towns covering the 1938-39 cotton ginning season.

The survey reveals that the 19 gins used 27,406,000 cu. ft. of gas during the period at a cost of $4,434.83 for the fuel, and ginned 12,167 bales at an average cost of 36.4 cents per bale, according to Earl Fox, engineer of the company.

The average cost per bale could have been reduced if cotton production had been heavier in the territory, stated Mr. Fox. The natural gas was utilized in most cases under steam boilers but three gins utilized the fuel in stationary engines.

The State Fuel Supply Co. is seeking to extend the use of natural gas in its territory to a greater number of cotton gins and other manufacturing and processing concerns.

■ ■

New Regulator Designed By Minneapolis-Honeywell

The Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., has recently completed the development of the Type VO80A Combustion Regulator, designed to hold the steam pressure in a gas-fired boiler within close limits, and to control the air supply to the burner in conjunction with the gas, resulting in high combustion efficiencies. This combustion regulator can be installed to fire automatically any radiant or blue flame burner of the atmospheric type.

High pressure safety is one of the functions of the regulator, the terminal panel being arranged for incorporation of additional safety devices such as a Lo-Water Cutoff, a Pilotstat or a Protectoglo flame safeguard relay.

■ ■

Henry D. Walbridge, Long With Gas Industry, Dies

Identified with the public utilities field and prominent in the direction of several large gas concerns since 1886, Henry D. Walbridge died in his New York home on April 29 at the age of 83.

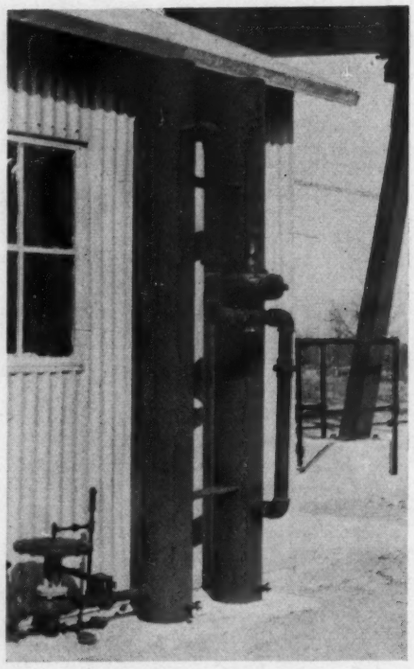
Mr. Walbridge was born in Kalamazoo, Mich., and during his years of business activity he was associated with gas companies in Grand Rapids and Detroit; he helped to establish the New York firm of Hodenkil, Walbridge & Co., and in 1911 founded Henry D. Walbridge & Co., operators and directors of public utilities in Texas and Louisiana. He had not been active since 1926.

■ ■

Halloren and Black Tie To Win A.G.A. Essay Contest

First prize in the national essay contest sponsored by the American Gas Association has been won by Clyde E. Halloren, engineer of the Gas Service Co., at El Dorado, Kan., and L. D. Black, Jr., Community Natural Gas Co., Ennis, Texas. Each received $25.

The title of Mr. Halloren's paper was "The Duties of a Local Manager," while Mr. Black's subject was "The Duties of a District Manager."



Dual separator and expansion tanks smooth pulsating gas flow to engine and simplify operating problem.

Two-Stage Fuel Expansion Smooths Engine Operation

DRIVING the pumping equipment of a number of oil wells with a vertical gas engine drawing fuel from a 350-lb. pressure main in the vicinity, erratic operation of the unit caused severe strains in the pumping equipment and imposed unnecessary peak loads on the engine. The trouble was traced to fluctuating gas supply to the mixing valve, and thence back to the single regulator and one expansion and surge tank incorporated in the unit by the engine builder.

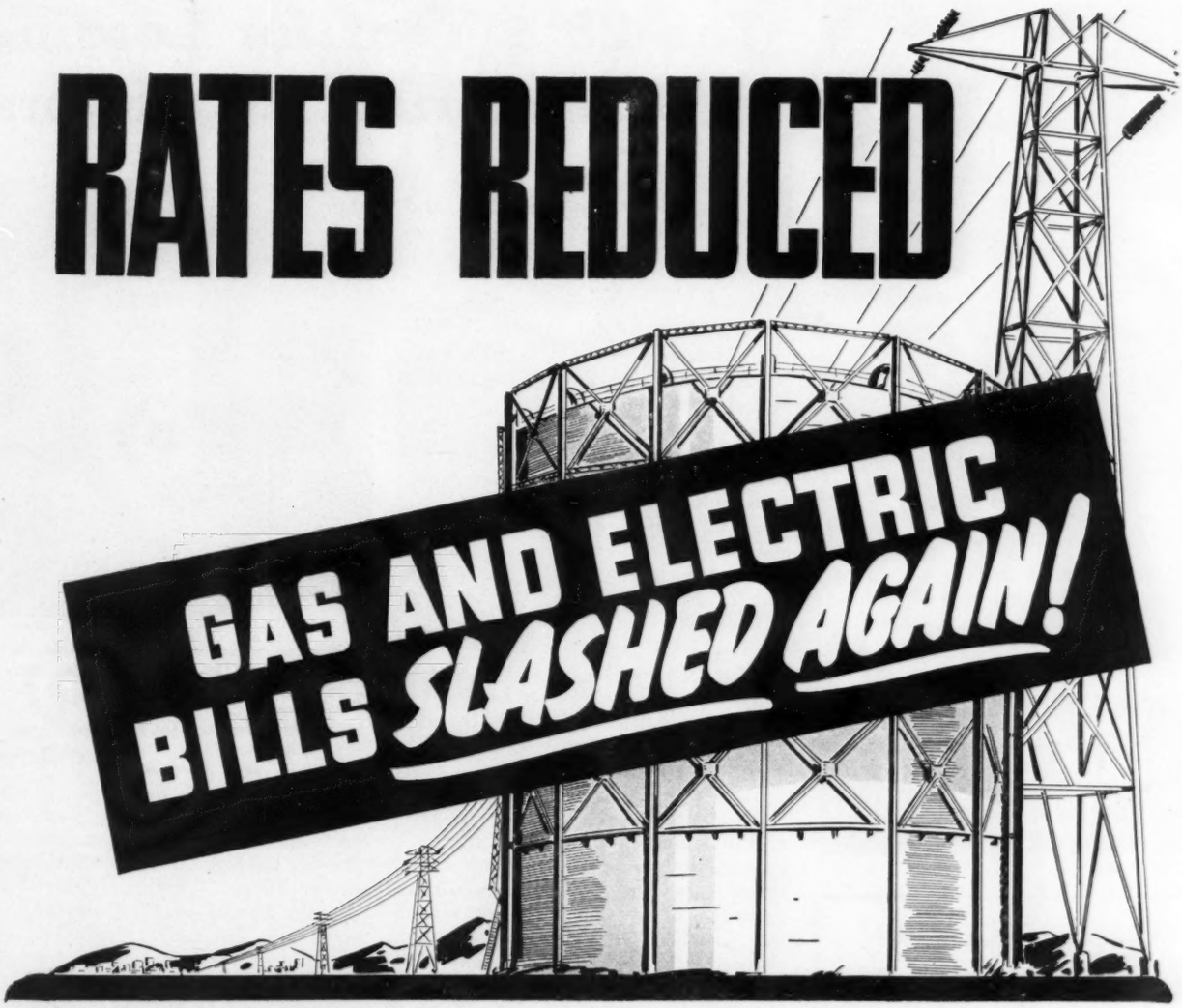
Replacing the one reducing valve by two, one taking gas from the high pressure main and reducing it to 25 lbs. per sq. in. at the first separator and tank, and the second valve cutting the pressure to the specified 2 in. of water recommended by the engine builder, cured the trouble. Vertical expansion tanks, made from 8-in. pipe, were used, high pressure gas entering the first near the bottom, and being drawn off at the top and carried through a drop to the second reducer and thence on down to the bottom of the second surge tank. In this tank the engine gas line was tapped in near the top, thus requiring a second upward flow at reduced speed in the relatively large diameter of the tank, resulting in thorough separation of any entrained liquid, and suppression of any fluctuations in flow which might occur in smaller lines as demands on the regulators varied.

■ ■

Pittsburg Fills Positions

Robert C. Hill, general sales manager of the Pittsburg Water Heater Corp., has announced the appointment of John Marlow, Syracuse, N. Y., as the Pittsburgh representative in northern New York state, and A. W. MacKenzie, Maplewood, N. J., as representative in New Jersey.

RATES REDUCED



$3,200,000

SYSTEM-WIDE SAVING TO OUR CUSTOMERS

Gas and Electric Rates cut again, again and AGAIN!

1929-30... Introduction of Natural Gas brought saving of $8,172,000 a year.

1936... Rates were reduced by $2,600,000 a year.

1938... Rates were reduced by $2,000,000 a year.

1939 (August 1st)... Gas rates take another cut of $1,000,000 a year.

1928... Electric rates reduced by $2,418,000.

1930... Another rate reduction saves customers $3,020,000 a year.

1936... Electric rates go down again to save $4,000,000 a year.

1937... Rates cut once more by $3,100,000 a year.

1939 (July 1st)...AGAIN Electric rates come down $2,200,000 a year.

$28,510,000 combined yearly saving to gas and electric customers compared to rates in effect in February, 1928

Beginning July 1st, a system-wide Electric Rate Reduction, saving electric customers $2,200,000 a year, will be automatically in effect.

Effective August 1st, a system-wide Natural Gas Rate Reduction will save Natural Gas customers $1,000,000 a year.

These latest rate cuts make a total of NINE MAJOR REDUCTIONS in the cost of gas and electricity to customers since 1928—*four in gas rates —five in electric rates.*

The combined annual savings to customers compared to rates in 1928 *total more than $28,510,000 a year at present volume of sales.* As a result, today you get two and a half times as much gas heat and slightly more than twice as much electricity for your dollar as you did in 1928.

The reductions just announced are the result of many months of study and investigation by the California Railroad Commission.

They have been made possible by increased use of gas and electricity by our customers and by the continuous introduction of new economies and efficiencies into the Company's operations.

P. G. and E. rates—both gas and electric—have long been among the lowest in the nation. Now they are to be lower than ever.

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

Its resistance to corrosion saves you money

Also economically ideal for Butane-Propane installations, hot water distribution lines and hot water heating lines. 3922

ANACONDA

THE AMERICAN BRASS COMPANY
WATERBURY • CONNECTICUT
Subsidiary of Anaconda Copper Mining Company

FREE SURFACE AREA INCREASED OVER 17%

WITH NEW ELECTRO-BRONZE PLATED STEEL GRILL

Now Fraser offers **new floor furnaces** with unbreakable steel grills . . . New grill allows 88% surface circulation area compared with 75% or less with cast iron grills—an increase of over 17% . . . The electro-bronze plating is smartly modern—harmonizes with floor finish. . . The smaller meshes prevent small articles dropping through register . . . grill lifts out completely, making cleaning easier. Also equalized intake and output—greater radiation—hinged observation cap—and many other improved Fraser features.

GET EXTRA PROFITS WITH

FRASER
GAS HEATING EQUIPMENT

Manufactured by FRASER FURNACE CO. Stockton, Calif.

Distributed by H. R. BASFORD CO. San Francisco Los Angeles

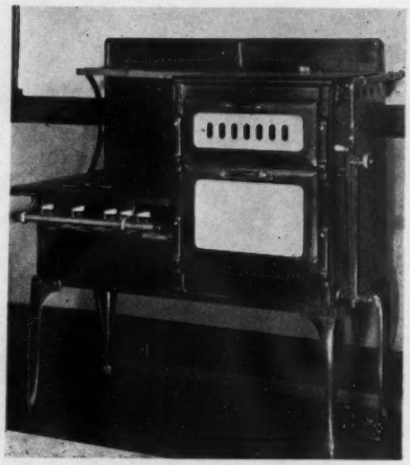
The 25th Year for Lorain Red Wheel Heat Regulators

SIXTEEN farm hands coming for dinner, plus a family of seven. And the bread burned! A young Ohio farm boy, seeing his mother's dismay, promised himself that some day he would do something to prevent such domestic tragedies. And he did. That is why this year American Stove Co. is celebrating the 25th anniversary of the Lorain Red Wheel Oven Heat Regulator.

Some three decades ago, B. E. Meacham, now superintendent of the National Stove Company Division, American Stove Co., watched his mother's struggles with an archaic stove. Later, employed by a gas range manufacturer, young Meacham picked up a thermostat for water heating.

The first recognized thermostat patent had been granted in 1831 to Dr. Andrew Ure, an Englishman. But a thermostat for cooking presented far greater difficulties. A hot water thermostat needs only a very narrow range of temperatures, while cooking heats demand a far wider span.

To control oven heat, a device was required that provided absolute accuracy, simplicity in construction and operation. After several years of experiment, a successful working model was produced. Results were double-checked in daily use, on a range installed in Mrs. Meacham's own kitchen. Here, under actual home conditions, she experimented to determine the best times and temperatures for various baked foods. It was Mrs. Meacham, too, who first used an alarm clock to time her baking, which led to the present-day Timer.



This range, the first equipped with the Lorain Oven Heat Regulator, was sold in the spring of 1915 to Mrs. J. L. Minsker of Charleston, W. Va. At the time of repurchase by American Stove Co., the range had given 11 years of satisfactory service.

In the Spring of 1915, the first direct action gas range, equipped with this practical oven heat regulator, was placed on the market. The first sale was made by J. H. Kirby, now manager of the Central Sales Division of the American Stove Co.

Calif. Co. Closes Extensive Cooking School Series

Southern California Gas Co.'s spring cooking school series, conducted by Florence Windecker with the assistance of Peggy Martin, ended on June 3. A total of 16 two-, three-, and four-day sessions were held in the company's Central, Northern, Southern, Eastern and San Joaquin Valley divisions. Harry Booth, Southern California Gas Co., sales department, acted as master of ceremonies. A feature of this season's cooking schools was a program of "gas magic" stunts, performed by the M.C.

■ ■

So. Calif. Co. Completes New Beverly Hills Office

Southern California Gas Co., Los Angeles, this month will complete a new gas distribution office for the Beverly Hills district near Los Angeles. Cost of the project is estimated at $54,000. The plant will consist of a main building, a one story adobe type brick structure, 85 ft. wide by 40 ft. deep; sheds for the storage of automotive equipment and a service yard. The main building will contain offices for foreman and dispatchers, facilities for service men, locker rooms, shower rooms and a store room. Garage accommodations will provide storage space for 11 large trucks and 28 service and pick-up cars. The company announces that it is considering a modernization project for the Beverly Hills office at 368 N. Bedford drive, also.

■ ■

Lone Star Supplies Gas to Lime Company's Kilns

Natural gas instead of lignite is now being used for fuel in the kilns of the Austin White Lime Co. at McNeil, Texas. The Lone Star Gas Co., Dallas, Texas, which furnishes the gas, recently laid five miles of high pressure pipe line from its Round Rock measuring station to the plant.

Each kiln is equipped with four specially designed gas burners and is fired from two sides. According to Thomas C. Bain and P. K. Griffin, industrial engineers at Waco and Cleburne who designed and installed the burners, the gas fired kilns have increased production at the plant.

Home Service Group To Meet In Los Angeles In August

THE third annual Home Service Conference sponsored by the Home Service Committee, Commercial Section, A.G.A., will be held in Los Angeles at the Chapman Park Hotel, August 22-25.

GLADYS PRICE

According to Gladys B. Price, chairman, Home Service Committee, home service women and sales managers will take part in the program, which will include actual demonstrations for platform and home call work; operation and practical use of modern gas appliances; a discussion of the work of the A.G.A. Testing Laboratories; kitchen planning in homes and school laboratories; aims and requirements for home service work. Group conferences will be held during intermission periods each morning and afternoon.

Details of the program are to be announced at a later date.

■ ■

Oklahoma Gas Co. Does Something About Weather

A seven-day recording thermometer that records temperature changes by the expansion and contraction of gas in a gas-filled bulb has been installed in Lawton, Okla., by the Southwestern Light and Power Co. on the front of its office building where the passing public can trace the day-to-day readings. The expansions and contractions of the gas due to heat changes are transmitted to a chart by means of a copper tube running from the bulb to the pressure element in the recording gage. A seven-day clock revolves the charts, which are removed at the end of each week.

■ ■

Charles Noll Advanced by Peoples Natural Gas Co.

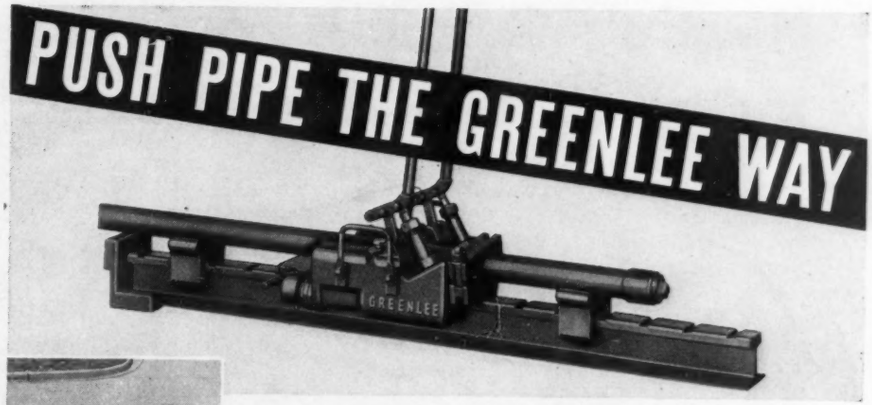
The Peoples Natural Gas Co., Omaha, Neb., and Ogden, Iowa, has named Charles Noll, for seven years a salesman in the Fairbury, Neb., district, to the management of the company's offices in Woodward and Bolton, Iowa, where new franchises have recently been acquired. A 25-year franchise has also been granted the company to operate in Rippey, Iowa.

Al Boerner, who has been storekeeper at Fairbury, will assume Mr. Noll's former duties.

■ ■

Edison Co. Elects Officers

Clarence L. Law, executive assistant to the vice-chairman of the board of directors of the Consolidated Edison Co. of New York, Inc., was elected a vice-president of the company at the recent organization meeting. Floyd L. Carlisle, chairman; Oscar H. Fogg, vice-chairman; Ralph H. Tapscott, president, and the other officers were re-elected. Charles Nodder was elected an assistant secretary.



Above is the Greenlee Hydraulic Pusher set up for pushing pipe under a paved street. One man, standing in a comfortable position, can exert a pressure of 40,000 pounds on the pipe clamp.

It's the Easy Way to Make Underground Installations

If you are using a pipe pusher that requires much manpower to operate it, you can save time and money by putting a Greenlee Hydraulic Pusher in operation. And if you are making underground installations by trenching, you can save still more. No longer is it necessary to tear up lawns and pavements.

With the Greenlee it is only necessary to make a trench long enough for the pusher and a section of pipe, and one man can send it where it is wanted, simply by pumping the handles. Different speeds are provided for varying soil conditions, and a push of from 4 to 7 feet can be made without changing the pipe clamp. This is because the power unit operates on a base, which can be furnished in different lengths. The range is for pipe up to 4-inch.

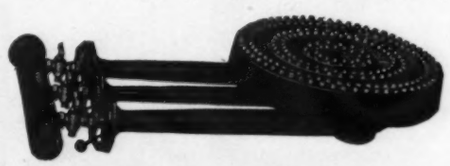
Ask NOW for complete information on this time- and labor-saving tool!

GREENLEE *Hydraulic* PIPE PUSHER

GREENLEE TOOL CO., 1700 Columbia Ave., ROCKFORD, ILL.

MORE INTENSE HEAT AND BETTER WORK WITH THE NEW JOHNSON 60 BCE

Triple Atmospheric Gas Burner



JOHNSON GAS APPLIANCE CO. Cedar Rapids IOWA

Patented Johnson Venturi Air Mixers give correct supply of secondary air, insuring perfect combustion and greater efficiency — more intense heat results in lower operating cost. Patented Johnson direct jet regulators assure easy, accurate adjustment. Ideal for any open flame work. All 3 burners operate independently — singly, in pairs, or triply. Send for complete FREE catalog today!

Heating Council Compiles Installation Guide Booklet

THE gas companies, who are members of the Metroplitan Heating and Air Conditioning Council*, have prepared a set of rules outlining recommended practices for the installation of gas winter air conditioning in new homes. The rules are in booklet form and the work is known as the Gasco Installation Guide, according to a report by H. P. Morehouse, chairman, Sub-Committee on Improved Selling Practice, A. G. A. House Heating and Air Conditioning Committee.

These standards, prepared by a joint committee of the Council and the Metropolitan Service Managers Group, have created such interest throughout the gas industry that the American Gas Association has taken over their distribution on a national basis and is making the book available in quantity to all gas companies, manufacturers and other interested parties, at a nominal cost.

The reason for the preparation of these standards was to bring order out of the chaotic state into which winter air conditioning was falling because of the unorthodox installation practices that were being followed.

The Gasco Installation Guide was *not* prepared as a code of minimum requirements, but rather as a set of standards through which everyone concerned could be assured of a first-class installation. The G. I. G. brings together the ideas of many authorities, applies them specifically to gas fuel and arranges them in a simple form for handy use by builders, architects, dealers, engineers, installers, utilities and the home buyer who is occasionally interested in such details.

The main subdivisions of the Gasco Installation Guide are:

1. Equipment Approval.
2. Heating Unit—(a) Fan and Motor, (b) Size.
3. Erection of Furnace.
4. Installation of Furnace—(a) Furnace Room, (b) Accessibility.
5. Controls—(a) Thermostat, (b) Furnace Control, (c) Summer Switch, (d) Humidifiers.
6. Air Ducts—(a) General, (b) Supply Ducts, (c) Return Ducts, (d) Dampers, (e) Supports.
7. Registers and Grilles—(a) General, (b) Supply Registers, (c) Return Grilles.
8. Filters.
9. Electrical Connections.
10. Balancing Systems.
11. General.

Copy of Specification Form.

Drawings showing structural details for good duct work practice.

Such decisions as to whether to use a clock or manual thermostat, insulate duct work, put canvas connections in trunk lines, noise and many others, are items on which compromises may be made and the user may still have a reasonably comfortable home. But on such decisions as sizing the unit, care in its erection, ample supplies and returns, adequate dampers, etc., are "must" items on which no compromises should be made.

These "must" items can best be covered by a "Code of Minimum Requirements" which should be enforced by the utility under penalty of withholding free service from installations not meeting these minimum requirements.

Such a Code of Minimum Requirements has been drafted by the New Jersey Gas Association and copies are available by addressing the secretary, or the writer, at 80 Park Place, Newark, New Jersey.

* Metropolitan Heating and Air Conditioning Council is an organization composed of representatives of the 18 Gas Companies in the Metropolitan New York City Area.

Oklahoma Fields Produce Two Large Gas Wells

The Cement field of Caddo county, Okla., famous for big gassers, brought in another big gas well during May which tested 105,000,000 cu. ft. of gas per day and then was temporarily shut in. The well was completed by Ray Stephens, Inc., and was drilled to 4346 ft.

Another gas well was added to the Van Vacter area southwest of Sayre in Beckham county, Okla. At a depth of 1066 ft. it produced an estimated 6,000,000 cu. ft. a day but was shut in pending construction of a pipe line to the field.

Texas Utility Changes Hands

City Gas Co., with distributing franchises in Clarendon, Hedley, Leila Lake, McGargel, Holiday, Archer City and Olney, Texas, was sold to Harwitz Brothers, of Dallas, and Thomas Cook, of Amarillo, in May. Upham Brothers, of Ohio, formerly owned the company.

The purchasers also own the Public Service Corp., of Texas, and the combined companies will serve about 6000 customers.

EXCLUSIVE design of Mueller Gas Era Furnace gives longest life---lowest operating cost.

L. J. MUELLER

FURNACE COMPANY

MILWAUKEE

For POSITIVE FLOW-CONTROL of gas, oil, water, steam, and air at MINIMUM COST, specify CRANE-QUALITY valves, fittings, fabricated pipe, and piping accessories.

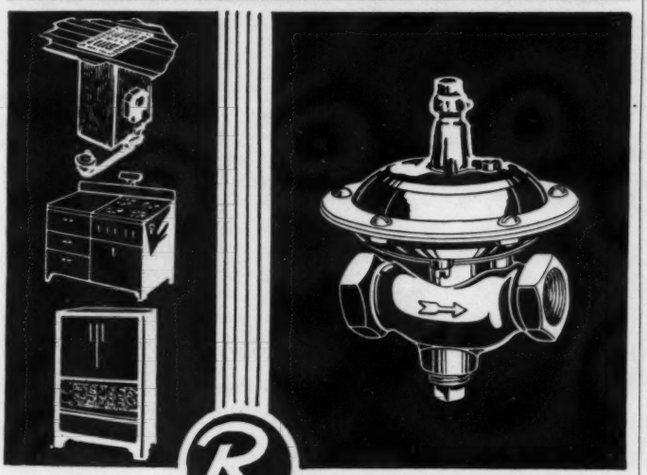
CRANE

VALVES · FITTINGS
PIPE · PLUMBING
HEATING · PUMPS

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO

NATION-WIDE SERVICE THROUGH BRANCHES AND WHOLESALERS IN ALL MARKETS

UNDER CONTROL!



☆ "Under Control" a welcome message from the Fire Chief at a big fire, but a plain statement of facts in the Gas Field when a REYNOLDS Regulator is installed. In the Low Pressure Field where sensitive regulation pays a premium, REYNOLDS offers extreme accuracy—the ability to keep small volume delivery pressure uniform even if the line pressure varies. It pays to buy REYNOLDS Regulators that give 100% operating performance,—Regulators that are rugged, long-lived and sensitive. "Under Control" means a Reynolds Regulator on the job.

Reynolds Engineers will aid you in solving your Gas Control problems. Reynolds cooperation is available upon request. Write.

BRANCH OFFICES:
421 Dwight Building,
Kansas City, Mo.
2nd Unit,
Santa Fe Building,
Dallas, Texas.

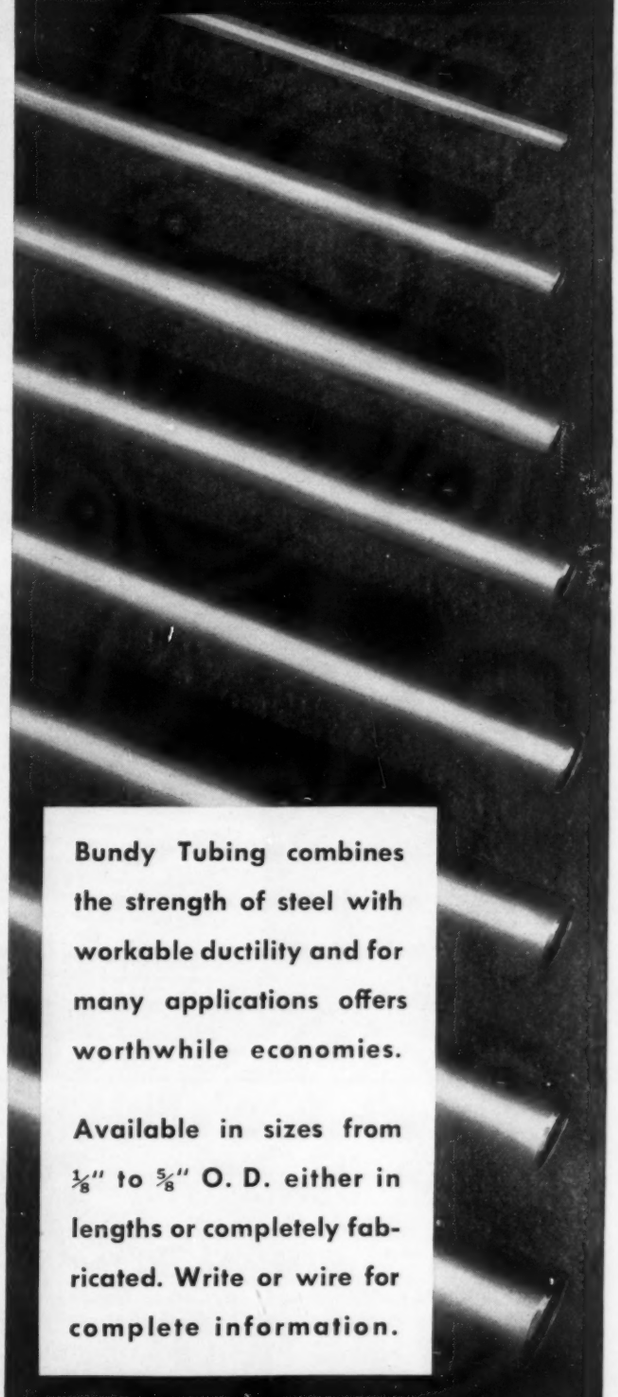
REPRESENTATIVES:
Eastern Appliance Company,
Boston, Mass.
Wm. A. Ehlers,
49 S. Clinton Street,
East Orange, N. J.

☆

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.

GAS CONTROL SINCE 1892

BUNDY TUBING
(COPPER COATED STEEL)
Offers Many Advantages in Gas Appliance Manufacture



Bundy Tubing combines the strength of steel with workable ductility and for many applications offers worthwhile economies.

Available in sizes from 1/8" to 5/8" O. D. either in lengths or completely fabricated. Write or wire for complete information.

BUNDY TUBING CO. • DETROIT

Winners Announced in A.G.A.E.M.'s Water Heater Essay Contest

WINNERS of a nationwide essay contest for utility company employes which is part of the extensive promotional campaign for the sale of automatic gas water heaters being currently conducted by the Association of Gas Appliance and Equipment Manufacturers, under direction of the National Automatic Gas Water Heater Sales Committee, have been announced from Association national headquarters in New York City, New York.

W. H. HOWE

Judges for the contest, which closed on April 1, were: Stanley Jenks, of *GAS*; Floyd Parsons, *Gas Age*; A. I. Phillips, *American Gas Journal*; and J. B. Read, Columbia Gas & Electric Corp., N. Y. John W. Clark, chairman of the A.G.A. Water Heater Committee, and C. D. Byrd, of A.G.A.E.M., assisted the committee of judges.

The first prize of $500 was awarded to William H. Howe, of the Tucson Gas Electric Light and Power Co., Tucson, Ariz. (see page 25).

C. C. Griswold, of the Brooklyn Union Gas Co., Brooklyn, N. Y., was awarded the second prize of $250.

The third prize of $150 was granted to E. W. Vick, of the New York State Electric & Gas Corp., Cortland, N. Y.

W. Daniel Williams, of the Public Service Electric & Gas Corp., Paterson, N. J., won fourth prize, $100.

Four honorable mention awards went to: William H. Bispham, Rockland Gas Co., Spring Valley, N. Y.; W. S. Keenan, Houston Natural Gas Co., Houston, Texas; J. F. Kelly, Public Service Electric & Gas Corp., Newark, N. J.; and E. I. Rudd, Jr., Connecticut Power Co., Stamford, Conn.

The subject for this essay contest, which was open to all utility company employes regardless of their respective positions, was "The Value of the Water Heating Load and How It May Be Secured."

VITROLINER
THE PERMANENT CHIMNEY LINER
is coated inside and out with a special, high temperature, acid-resisting vitreous enamel. It prevents acid and destructive moisture from coming in contact with masonry and preserves chimneys way beyond their average life. Used by the largest utility companies in the United States and Canada.
Condensation Engineering Corporation
335 South Western Avenue, Chicago

GAS — 810 South Spring Street, Los Angeles, California

Yes! SEND ME GAS

for ☐ 3 Years at $2.00 ☐ 1 Year at $1.00,

SUBSCRIPTION RATES: United States, Canada, Mexico and Central American countries (in advance), three years $2.00; all other countries, $3.00 per year.

Name.....Position.....
Company.....
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City.....State.....
☐ Check enclosed ☐ Send bill

A.G.A. Publishes Handbook For Home Service Women

The publication of a new handbook for home service departments, *Home Service Home Calls*, has been announced by the American Gas Association. This book is compiled by the Home Service Committees of 1938 and 1939, and contains discussions of actual experiences of these committees in home calls; their preparation and procedure; home call habits; suggested approaches; and questions and answers on domestic gas equipment. The text has been checked for accuracy and policy by representatives of the A.G.A. Testing Laboratory, gas service engineers and by sales managers. Copies may be obtained from A.G.A. headquarters (price 20 cents).

The new 44-page book supersedes the earlier booklet of 24 pages published in 1931, and is one of four comprising the Home Service Manual. The other three booklets are: *Home Service Aims, Organization and Publicity* (1933, 10 cents); *Home Service Inside Activities* (Demonstrations, 1932, 10 cents); *Home Service Outside Activities* (Outside Company Quarters, 1932, 10 cents).

Taylor, Greene Featured On May S.C.M.A. Program

The May meeting of the Southern California Meter Association was held in Huntington Park at the Van Matre Inn, Thursday, May 25. President H. A. Faull, Southern Counties Gas Co., presided.

Two reports were presented during the part of the meeting devoted to technical subjects. One, a discussion of the fabrication and use of bored meter tubes, was given by Gordon Greene, Robinson Orifice Fitting Co., Los Angeles; and the other, illustrated with slides, was a discussion of the work of the committee on coefficient simplification, by J. B. Taylor, past president of the Association.

The entertainment feature of the program was a talk by Oscar Reichow, business manager and secretary of the Hollywood Stars, who spoke on baseball leagues, national and local.

Chillicothe, Mo., Changes To Liquefied Petroleum Gas

The Missouri Public Service Corp., Warrensburg, Mo., has recently installed a liquefied petroleum gas plant in Chillicothe, Mo. The new gas replaces the carbureted water gas formerly used, and has a B.t.u. of 570, according to W. B. Head, president of the Missouri utility.

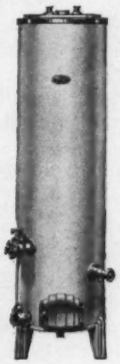
The conversion was made without making any change in appliance burners. In the April issue of *GAS*, page 67, appeared a news item on this conversion, which erroneously stated that new burners were being installed.

Kramer Leaves Atlanta Co.

E. P. Kramer, Atlanta (Ga.) Gas Light Co., has resigned from his position as manager of industrial sales to join Ebasco Services, Inc., New York City, where he will be in the rate department.

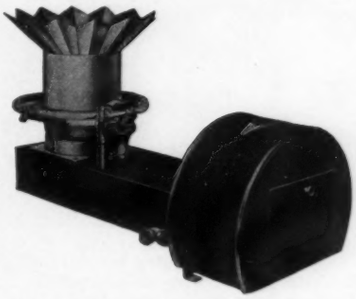
W. H. Ligon, formerly superintendent of the gas department, Gulf States Utilities Co., Baton Rouge, La., will replace Mr. Kramer in the Atlanta company.

Welsbach Products *in their 53rd Year of Service to the Gas Industry*



Will Improve the World of Tomorrow As They Did the World of Yesterday and Today . . .

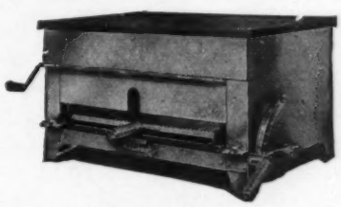
Welsbach has, through scientific research and engineering ingenuity, anticipated the industry's future trends while serving its current needs.
Hundreds of gas companies know, from experience, that Welsbach products give modern performance . . . at low operating cost . . . with a minimum of servicing . . . and enhance the value of gas as a fuel . . . to keep it safe from competition.



FURNACE BURNERS

WELSBACH PRODUCTS EXHIBITED

Gas Industries Building — New York World's Fair 1939
Homes and Gardens Building — Golden Gate Exposition 1939



BROILER-GRIDDLES

Welsbach Company

Gloucester City, N. J. — *Branches* — Chicago, San Francisco

Good GAS HEAT for COMFORT ECONOMY CONVENIENCE HEALTH

JOHN ZINK
FLOOR FURNACE

The Simplest, Sturdiest and most Inexpensive

The Only Floor Furnace that has Uniform Air Temperature

Made in Two Sizes

50,000 B.T.U. Capacity — 30,000 B.T.U. Capacity
$32.50 F.O.B. Tulsa **$27.50**

"Repeat orders prove that John Zink Floor Furnaces are better"

JOHN ZINK BURNERS
Tulsa — 4401 South Peoria

JOHN ZINK BURNERS

TULSA - NEW YORK
N.Y. — 342 Madison Ave.

Mid-west Gas Association leaders (left to right): F. J. Gunther, president-elect; H. E. Peckham, second vice president-elect; R. B. Searing, secretary; Prof. L. W. Mahone, chairman arrangements committee at gas school; A. L. Fritchey, retiring director; E. M. Raun, past chairman production committee; E. B. Dushane, first vice president-elect.

Mid-West Gas Men Elect Gunther President at 35th Convention

AT THE 35th annual convention of the Mid-West Gas Association held in Des Moines, Iowa, April 10-12, the following officers were elected:

President, F. J. Gunther, Iowa-Nebraska Light & Power Co., Lincoln, Neb.; first vice-president, C. B. Dushane, Jr., American Meter Co., Chicago; second vice-president, H. E. Peckham, Northern States Power Co., St. Paul, Minn.; secretary-treasurer, R. B. Searing, Sioux City, Iowa.

New directors appointed were: R. H. Garrison, Iowa Public Service Co., Sioux City; H. K. Wrench, Minneapolis Gas Light Co., Minneapolis; K. R. D. Wolfe, Fisher Governor Co., Marshalltown, Iowa; H. Gildersleeve, Iowa-Nebraska Light & Power Co., Lincoln. Due to the resignation of R. J. Hageman, Cedar Rapids, Iowa, and C. J. Strike, Huron, S. D., two of the outgoing members of the council, T. L. Connor, Mason City, Iowa, and E. J. Otterbein, Davenport, Iowa, were re-elected to complete the unexpired terms of the resigning members.

Plans were approved for the annual gas school and conference to be held at Ames, Iowa, the early part of November. C. B. Dushane, Jr., was appointed general chairman of the school, with Harold E. Peckham, vice general chairman. Arrangements were made for a new section at the school, covering actual adjustment work on appliance controls and coming under the direction of the utilization committee, D. R. Reimers, chairman.

■ ■

World's Fair Tickets Offered Brooklyn Union Employes

A book of tickets to the New York World's Fair is being offered as a prize to each employe of the Brooklyn Union Gas Co., Brooklyn, N. Y., who submits two productive leads for the "Heating Comfort Offer" sales campaign, it was announced by John H. Braine, chairman of the employe sales promotion committee. This offer is in effect from March 1 to October 1.

Cash prizes, in addition to the World's Fair tickets, are being offered to the three contact and three non-contact employes who turn in the greatest number of productive leads during the term of the contest. The book of tickets contains five for general admission, and six covering admission to any of the nine feature entertainment attractions.

■ ■

Dallas Negro Cooks Taught Use of Modern Gas Range

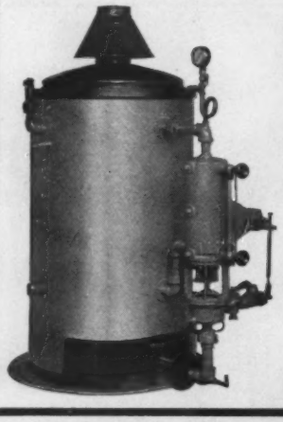
Several hundred Dallas, Texas, negro cooks and maids were taught to use modern gas ranges efficiently in a series of five free cooking schools held once a week at the Dallas Gas Co.'s auditorium. Albertine Berry, Lone Star Gas System home economics director, conducted demonstrations on table service, meal planning and preparation and cooking of pastries, meats and whole oven and broiler meals. She was assisted by Gertrude Payne and Rachael McDonald.

The Lone Star Gas System's new movie, "Never So Embarrassed," was presented before the classes.

■ ■

Extends Sioux Falls Mains

A mid-May election in South Sioux Falls, S. D., granted to the Sioux Falls Gas Co. a 20-year operating franchise. According to the company's manager, S. D. Whiteman, mains are now within 200 feet of the village limits, and service would be installed as needed.



INDUSTRIAL GAS BOILERS

Plain tubular . . . . . ¾ to 10 H.P.
Water Leg tubular . . 5 to 45 H.P.
HE Flueless . . . . . 1 to 18 H.P.

ASME Code for 100 lbs. S.W.P., also for higher pressures.
Non-electric Low Water Cut-offs for all types of boilers.

P. M. Lattner Mfg. Company
CEDAR RAPIDS IOWA

BASO

THERMO ELECTRIC SAFETY CONTROL FOR GAS BURNING APPLIANCES

BOILERS ★ FURNACES ★ CONV. BURNERS ★ SPACE HEATERS ★ UNIT HEATERS ★ AIR CONDITIONERS OVENS ★ RANGES ★ WATER HEATERS, ETC.

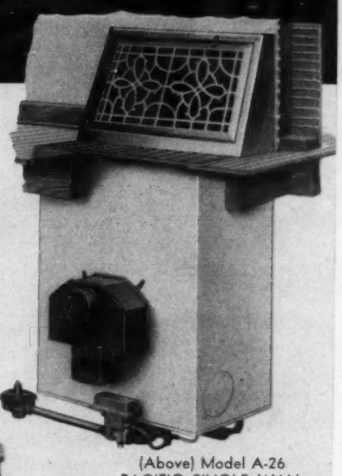
GAS VALVE SERIES 500

MILWAUKEE GAS SPECIALTY CO.
MILWAUKEE ★ WISCONSIN

ELECTRIC SWITCH SERIES 600

ISN'T THIS RIGHT UP YOUR ALLEY?

A Floor Furnace with Side Wall Registers!

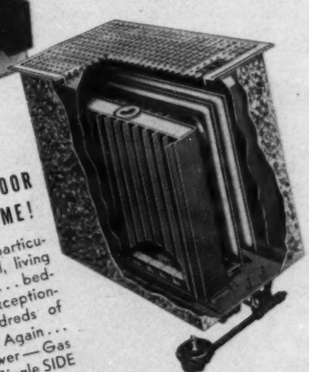


TWO OUT OF FOUR PROSPECTS WANT "SOMETHING DIFFERENT"

Now you can sell Gas Floor Furnaces tailored to the job—complete, compact, easily installed. PACIFIC Floor Furnace, with either floor or side wall registers—for heating single rooms, two-room combinations or entire dwellings.

(Above) Model A-26 PACIFIC SINGLE WALL REGISTER FLOOR FURNACE

(Left) Model A-67 PACIFIC DUAL WALL REGISTER FLOOR FURNACE



(Above) Model A-24 PACIFIC GAS FLOOR FURNACE

NOW, A CORRECT TYPE FLOOR FURNACE FOR EVERY HOME!

Ever been "stumped" by a particularly tough job . . . narrow hall, living room with limited floor space . . . bedroom, den, nook or corner exceptionally "hard to heat"? Hundreds of homes have these problems. Again . . . PACIFIC supplies the answer — Gas Floor Furnaces with Dual or Single SIDE WALL REGISTERS. Extended base types for old houses avoid cutting into wall or plaster. Up-to-the-minute designs for new construction save installation costs. No more "jobs lost" because furnace won't fit. Write for typical floor plans . . . valuable sales ideas. There's more money than ever in Floor Furnaces . . . when you sell PACIFIC. Mail the Coupon . . . Today!

26 SUCCESSFUL YEARS

. . . and still growing!

Pin to your letterhead . . Mail today.

Pacific Gas Radiator Co. Dept. G-6
1740 W. Washington Blvd., Los Angeles
Send complete literature and prices on—

Name.....

Address.....

FLOOR FURNACES • FORCED AIR UNITS

Pacific

BASEMENT FURNACES • UNIT HEATERS

GOOD ADVICE ANYWHERE, ANYTIME

Take No Chances!

FOR EXAMPLE:

IN SAFETY DEVICES FOR DOMESTIC WATER HEATERS

These Two Names Guarantee Positive Protection

LOVEKIN KITSON

IT'S ALWAYS SAFE TO SAY: "KITSON"!

Ask for literature on the Kitson "DEFENDER" IHF Emergency Gas Shut-off Valve . . . it POSITIVELY PREVENTS OVERHEATING of gas water heater tanks . . . turns off the gas when water temperature reaches 175°, 195° or 212°, depending on the setting. Details and price list are yours without obligation.

KITSON COMPANY

2409-15 Westmoreland Street, Philadelphia, Pennsylvania

Manufacturers of Kitson Safety Devices (Lovekin Patents) for Domestic Water Heaters . . . Quality Brass Goods for Gas, Water and All Plumbing Uses.

Grand Rapids Gas Men Aid Police, Fire Departments

A FAR-SIGHTED public relations policy of the Michigan Consolidated Gas Co., Grand Rapids, Mich., has resulted in the training of nearly 200 regular employes to serve as an auxiliary to the Grand Rapids police and fire departments and the Kent county sheriff in cases of drowning, asphyxiation or shock produced by contact with high voltage electric currents.

These men form the source material for the inhalator squads of the gas company. Three of the regular company trucks, fully equipped with short wave radio and ordinarily used for night service calls and to release pressure on the regular force in day hours, have inhalator equipment available. Two carry this equipment as part of their service kit. Day and night they stand ready for emergencies. They are constantly in communication with fire and police departments, via the police radio.

The inhalator apparatus actually is used on an average of 20 times a year, according to John Heydenburg, service department foreman. In one out of four cases the squad is successful in reviving the victim.

Actual inhalator training has been given 50 of the regular company employes under the direction of George Ludwig, department head, and Heydenburg. More than 150 others are proficient in the use of the Schaeffer method of artificial respiration, a necessary supplement to the inhalator.

The modern method of artificial resuscitation—the inhalator—is not, like the pulmotor, a mechanical device for forcing air in and out of the lungs, according to Ludwig.

When the Schaeffer method of artificial respiration is used, the lungs are pressed in, then allowed to expand. By means of a gas mask over the face, the inhalator feeds in a mixture of carbon dioxide and oxygen. The five percent of carbon dioxide acts as a stimulant to breathing while the oxygen provides five times as much oxygen as the patient could take in in a breath of ordinary air. Thus it greatly hastens recovery and the return of consciousness, Ludwig said.

One of the gas company cars answers every firm alarm, day or night, and frequently gives firemen valuable assistance. The police have one inhalator in a police ambulance but occasionally take advantage of the gas company's service. Frequently the gas company squad responds to calls from the sheriff's department to aid in attempting to revive victims of drowning accidents.

■ ■

W. J. Hill, Detroit-Michigan Co. Sales Manager, Dies

W. J. HILL

William J. Hill, sales manager for Detroit-Michigan Stove Co., died April 20 in Grace Hospital, Detroit, after an illness of several weeks.

Mr. Hill was associated with Detroit-Michigan Stove Co. for 42 years, and was sales manager for the past 20 years. Before holding that office he had served in various executive positions.

Mr. Hill, known as "Bill" to the gas industry, was especially prominent in commercial cooking activities.

■ ■

CP Ranger Club Issues First Edition of NEWS

The first issue of *CP Ranger News*, a four-page paper published by the CP Ranger Club of the A.G.A., is being distributed to all salesmen and dealers registered in the club. The *News* is to be published at regular intervals throughout the year.

More than 8000 dealers and gas range salesmen have registered for membership, it was reported in the *News*, and gas range sales the first three months of 1939 were 35 per cent greater than in the first three months of 1938, due to the increased interest in the promotion of CP ranges.

■ ■

Moffats, Ltd., to Handle Roper Ranges in Canada

The Geo. D. Roper Corp., Rockford, Ill., has completed arrangements with Moffats, Ltd., Weston, Ontario, Canada, for the manufacture and distribution of Roper ranges in Canada under the name "Moffat Roper." Complete lines of CP and Standard A.G.A. ranges will be produced.

■ ■

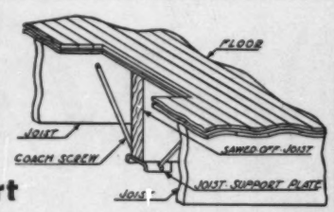
Clyde Myers Promoted

The United Gas Service Co., of Arnett, Okla., has announced the appointment of Clyde Myers to the management of its Harper, Kan., office. He has been transferred from his position as manager of the Vinita Fuel Co., and is succeeded by Clarence Mineo in Vinita, Okla.

SOLVED Floor Furnace Installation Problems

INLAND

Adjustable Joist Support



- Eliminates tricky header construction for sawed joists.
- Provides strong, rigid reinforcement. No sagging, creaky floors.
- Easy to install. Saves time and money. Makes a better job.
- New low price, $2 per set. Less 50% to trade. Liberal quantity discounts.
- Specify Inland Adjustable Joist Support for your next floor furnace job.

Write for Details Today

INLAND MFG. CO. 1120 NORTH CICERO AVE. CHICAGO, ILL.

MUELLER GAS DISTRIBUTION EQUIPMENT

The time-tested Mueller line includes Mueller Evenflow Service Regulators, Gas Stops, Service Stops, Stove Stops, Drilling and Tapping Machines, service boxes, meter trims and similar equipment. Write for description and prices.

MUELLER CO., Los Angeles, Calif.

Factories: Decatur, Ill.; Chattanooga, Tenn.; Los Angeles, Calif.; Sarnia, Ont.
Branches: New York and San Francisco

Put CLEVELANDS ON YOUR NEXT TRENCHING JOB *and* →

WATCH YOUR COSTS GO DOWN

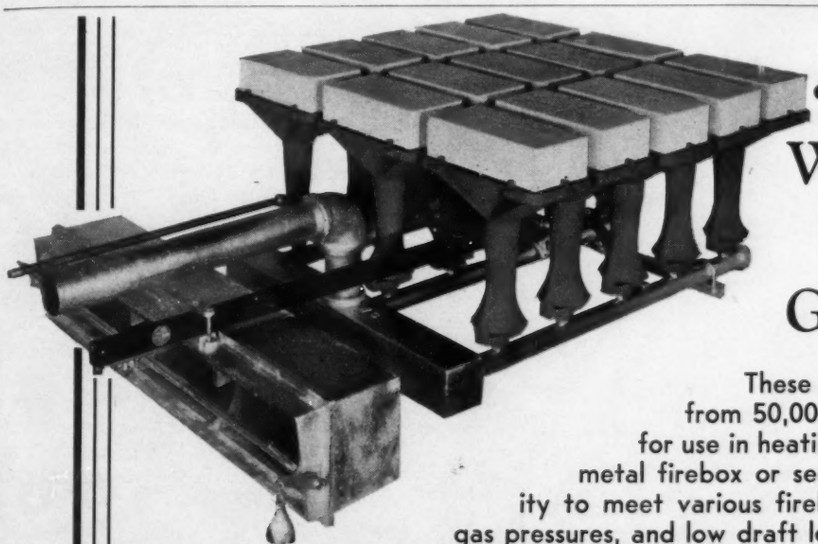
One important "Cleveland" idea that adds to the versatility of performance is illustrated at bottom right—low cost transportation, at truck speed, via special trailer—"Clevelands" load or unload in 10 to 15 minutes.

MOST "machine-ditch" at least cost. That's what you get with Clevelands. This has been proven time and time again on thousands of miles of trench in all types of soil and under many various topographical conditions. Whether the job's a long main line in the open country or short distribution lines in the confined areas of the cities and suburbs, you'll find, as others have, that "Cleveland's" dependability, mobility and all 'round utility assure maximum footage and show definite worth-while savings in time and expense. "Clevelands" deliver this "bonus performance" because they are quality built from digging wheel to radiator cap. Nowhere is quality sacrificed to cost. Compact, fast, flexible and mobile, they are easy to operate and transport. Rugged and amply powered for the toughest task, they come through day after day delivering performance that shows savings that you never thought possible. Get the details today.

THE CLEVELAND TRENCHER COMPANY

"Pioneer of the Small Trencher"

20100 St. Clair Ave. Cleveland, Ohio



WECO—N.G.E.

Series F600

GAS BURNERS

These burners are available for ratings from 50,000 to 10,000,000 B. T. U. output, for use in heating boilers, power boilers—in any metal firebox or sectional boiler. Featuring flexibility to meet various firebox shapes and sizes at various gas pressures, and low draft loss. Full automatic controls that operate properly can be easily applied.

GUARANTEED VIBRATIONLESS UNDER ANY LOAD CONDITION

This burner operates on straight natural gas and mixed gas to 800 B. T. U. Gives perfect horizontal distribution.

THE WEBSTER ENGINEERING CO.

TULSA —DIVISION OF— OKLAHOMA

Surface Combustion Corp. . . . . Toledo, Ohio

F. J. Evans Engineering Co., Birmingham and Atlanta

Gas & Heating Specialty Co., Dallas Mechanical Equipment Co., Houston Frank P. Fischer Engineering Co., New Orleans

San Francisco Registers Eighth Veto Of Municipal Power Distribution

AT A SPECIAL election held May 19 voters of San Francisco for the eighth time put themselves on record as opposing municipal distribution of power. The proposition submitted to them provided for the issuing of $55,000,000 in revenue bonds, either for the purchase of distributing facilities of Pacific Gas and Electric Co. in the city of San Francisco, or the building of a competitive system. Under a charter provision revenue bonds can be issued on a majority vote, while general obligation bonds require a two-thirds majority.

A similar measure calling for a $50,000,000 revenue bond issue was defeated in a March election in 1937. Secretary of the Interior Ickes, with the support of Congressman Franck Havenner, and other leaders of the public ownership movement, refused to accept the decision of the voters and by threatening the revoking of water permits at Hetch Hetchy forced the supervisors into another election. The people refused to be coerced by the threat, however, registering 121,895 against the measure to 49,843 for it, a majority of 72,052 "nos," according to information received from A. C. Joy, advertising manager, Pacific Gas and Electric Co.

The Raker Act as originally drawn contained a provision prohibiting the sale of power for distribution to any private concern. Refusal of the voters to vote the necessary money for San Francisco to take over or build a distribution system, resulted in the delivery of the power to Pacific Gas and Electric Co. under an agency contract, which has been ruled illegal by a Federal district court judge and is now up for appeal to the Federal circuit court. Argument on the appeal was made before this court on the very day of the election, and decision is expected soon. The agency contract has been in operation for 10 years, during which time Pacific Gas and Electric Co. has turned over to the city an average of more than $2,200,000 a year.

Since the eight defeats of municipally-owned power project proposals, there has developed a movement to amend the Raker Act to permit sale of power to a private utility, according to Mr. Joy.

■ ■

GEORGE A. BURRELL

Petroleum and Gas Engineer

Design—Construction—Reports

■

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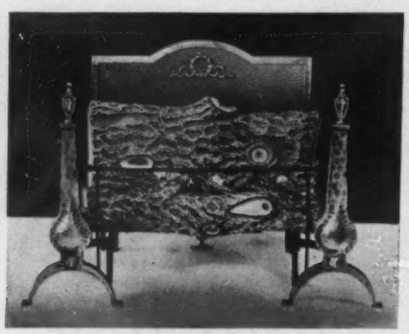


THE YULE LOG

A NEW GAS LOG

20" 20M B.T.U. | 25" 25M B.T.U. | 30" 30M B.T.U.

A. G. A. APPROVED

For Natural, Manufactured, Butane-Air Propane and Butane Gases.

This New Gas Log made by Specialists in Gas Log Manufacture opens up a Big Field of Business everywhere for Gas Companies and Dealers.

Write for Details

Strait & Richards, Inc.

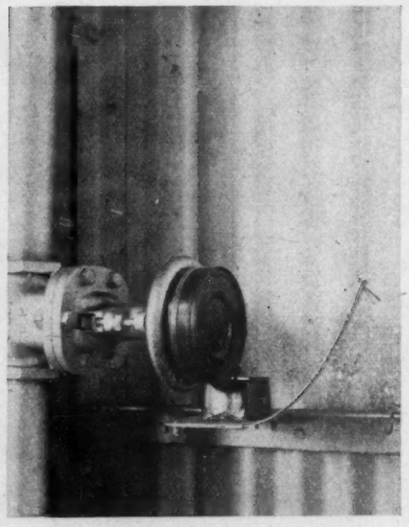
Selvage St. Newark, N. J.

OCT 3 1940

New Bulletin Announces Connelly's Improved U-Gage

The Connelly Iron Sponge & Governor Co., Chicago, Ill., and Elizabeth, N. J., has recently announced an improved Universal U-Gage or Manometer, designed for portable or stationary use, either as a pressure or differential gage. These instruments are equipped with clear, glass-like, unbreakable ⅜-in. or ⅝-in. tubing, in a wide range of sizes, plain or fitted with valves for portable use and as a differential gage. Specially constructed models are also available for use as Mercury gages.

Bulletin No. 401-B-1, just released by the Connelly Iron Sponge & Governor Co., describes and illustrates these gages, listing prices and full information. A copy of this bulletin may be obtained by writing this publication or the company.



Weight on hinged shelf acts instantly to close gas valve when released by opening of fusible link in support wire.

Emergency Fuel Cut-off For Gas Engines

THE FUSIBLE LINK used throughout industry for controlling fire doors and blocking draft openings also finds application in the power house, where gas engines are used as prime movers.

Mounted on the stem of the main line gas valve is a small drum, carrying on it sufficient wraps of flexible wire line (tiller rope is especially well suited for this purpose, being very flexible and practically rust-proof) to insure closing of the valve when used to revolve the drum. Attached to the end of the line is a counterweight, made of lead to eliminate the remotest possibility of the weight striking a spark if dropped onto the concrete engine-room floor. This weight normally rested on a small, hinged platform, its outer end supported by a wire line in which is a fusible link. When the temperature of the engine room rises above the critical temperature, opening of this link releases the weight, the valve is spun shut, and the power unit shut down—all in less time than the most alert engineer could get on the job.

To prevent the supporting line from possibly dropping on and fouling the drum, the support is attached at the end of a steel spring. With release of the line by the opening of the link, the spring flips the supporting line clear of the drum, which, in turn, allows the safety device to function unhampered.

Resetting involves merely the inserting of a new link in the line, and replacing of the weight on its platform.

PARTNERS IN PROGRESS for more than a century, the gas industry and cast iron pressure pipe makers have steadily improved methods and materials in gas distribution. With higher pressures came the modern bottle-tight mechanical joint. All mechanical joints made by CIPRA members are identical in principle though differing in design—and *all* are *bottle-tight.*

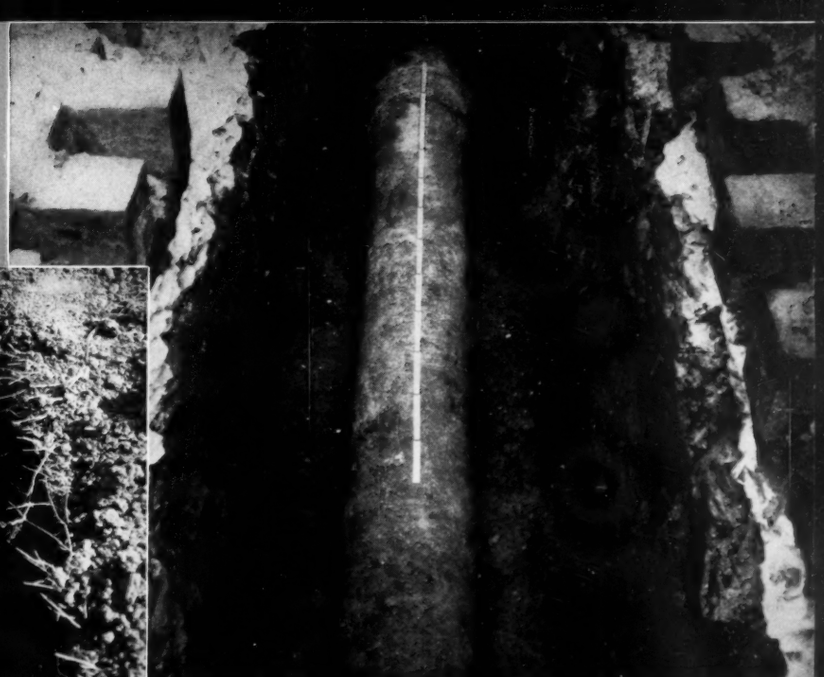
Look for the "Q-Check" registered trade mark. Cast iron pipe is made in diameters from 1¼ to 84 inches.

THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER, 1013 PEOPLES GAS BUILDING, CHICAGO, ILLINOIS

CAST IRON PIPE

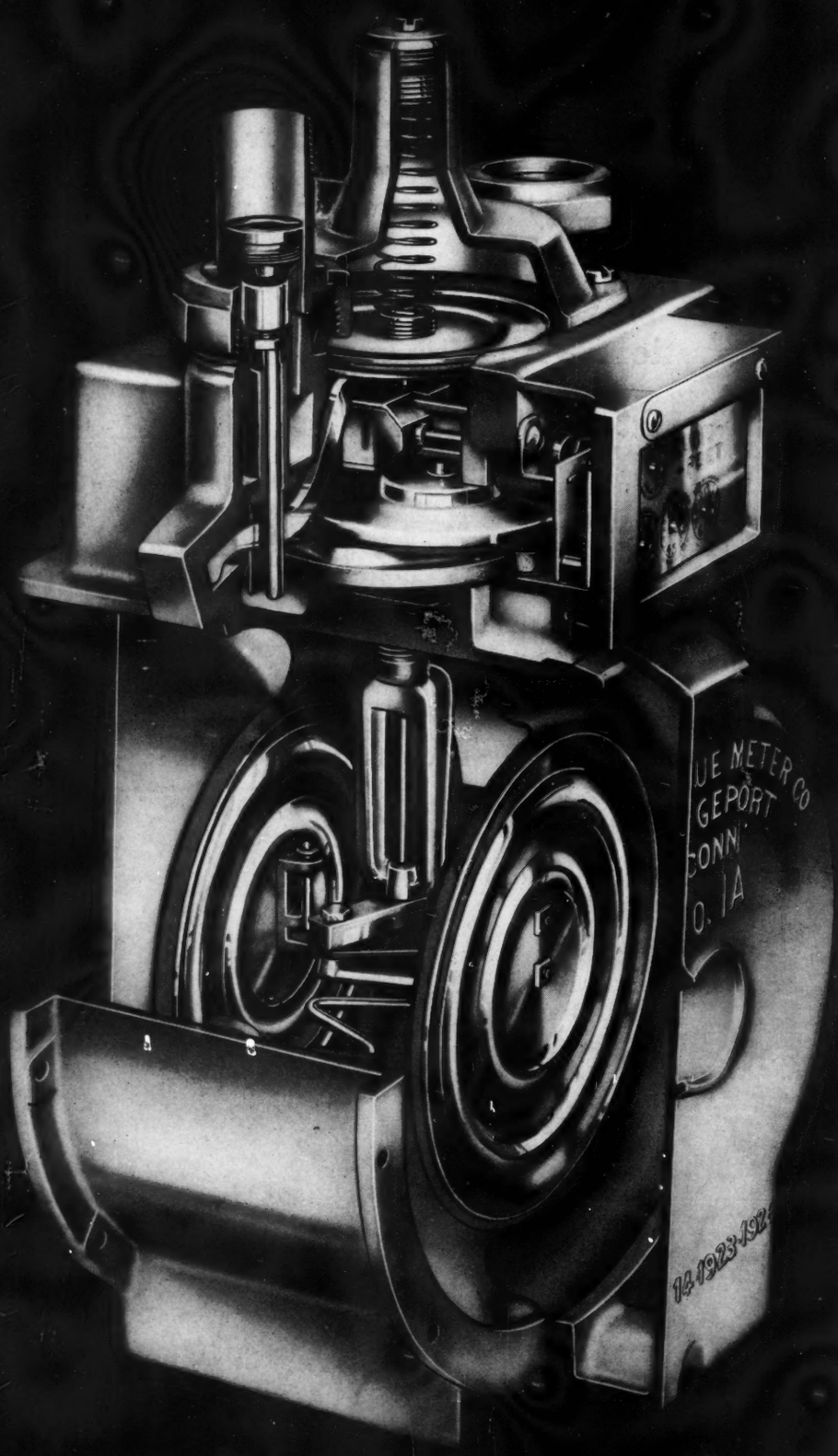
THE STANDARD MATERIAL FOR UNDERGROUND MAINS

One man, one tool and elbow-room in the trench are all that's required to install the modern gas-tight mechanical joint.



Here is an unretouched photo of a cast iron distribution main installed in Philadelphia more than a century ago—recently uncovered, inspected and approved for further indefinite service.

Sprague Leads Again



Here it is!!

The latest achievement in Gas Measurement and Control . . . a combination Meter and Regulator. Write for particulars.

THE SPRAGUE METER CO., BRIDGEPORT, CONN.